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Ferranti Computer Systems  
Langley, Surrey  
Windsor, Devon  
Manchester M12 5JA  
Tel: 061-499 1111  
Fax: 061-499 1111

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# Computer Weekly

Thursday, August 11, 1983

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## Phone exchange gets green light

by Donald Kennett

AT&T's most advanced public telephone exchange is to go into production for the world market on the first day of 1984. A joint venture with Philips, which it has been preparing since last year, is the vehicle for its big push into international markets. The venture was clinched by the signing of the basic part of the agreement between the two companies late last month.

The venture, yet to be named, will be based in Holland, staffed mostly by Philips people and managed jointly by both parents.

Over 5,000 are expected to be employed in the new company, but Philips said that this would not necessarily create new vacancies in the parent company, since their activities would transfer too.

Philips has been developing its own digital public exchange, the PRX-D, for some years. The first went into service in West Germany this year. Development of parts of this system will continue, despite the fact that the new venture's activities will centre on AT&T's 5-

MORE than 675,000 of AT&T's unionised workers took their last opportunity to go on strike together last weekend. They were dissatisfied with the pay and conditions with which they would face the divestiture by AT&T of its 22 operating companies early next year, believing that it could cause the erosion of their jobs.

In the UK, the British Telecom Union Committee is worried about similar effects arising from the government's plan to privatise BT. But AT&T's workforce is more than two-and-a-half times the size. It is equivalent to about a quarter of the UK's unemployed.

ESS (Number Five Electronic Switching System), which is the first of the company has developed from the outset to meet international as well as US standards.

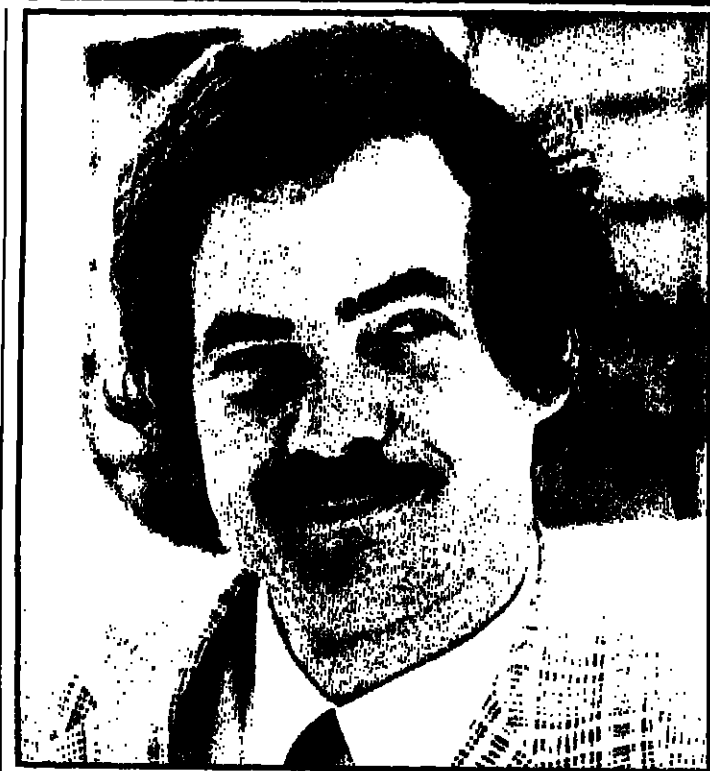
It can handle from 1,000 to 100,000 lines and the first went into service in the US late last year. The joint venture's first product will be called the 5-ESS/PRX, and

it will use the Philips' technology, particularly in interfacing to existing public networks and in accommodating the requirements of different PTTs. Philips executives are already in the early stages of discussions with the Dutch PTT about a sale.

Philips will also transfer its transmission systems activities to the joint venture, although AT&T's main interest in the deal is to gain access to Philips' worldwide marketing network. AT&T has been precluded until recently from operating internationally and it has just 14 small sales offices outside the US.

A spokesman for AT&T International said: "They are putting up plant and people and we are putting up money."

Philips Telecommunications currently employs 19,000. The parts that will not be transferred to the joint venture are the business (private) communications systems, including PABXs, mobile systems, traffic control and home communications systems - which are under development.



OSBORNE... "Some summer softening."

## Osborne is close to shutdown

by Kevin Cahill  
OSBORNE Computers, one of the most dramatic US venture start-ups of recent times, is facing virtual closure as its East coast factory shuts and workers are laid off at head office.

Osborne is the brainchild of former computer journalist Adam Osborne, a UK expatriate living in California, and was once forecast to make \$100 million in first year sales of its portable computer, the Osborne 1.

Instead, the company ran into serious cashflow problems following a failure to go public and raise cash in the spring.

The cashflow problem was aggravated by a massive slump in sales between January and June, from 27,000 units a month to just 2,000.

Osborne, quoted in the *Wall Street Journal*, said that the company was seeing "some summer softening in orders".

The quote hardly explains why Osborne suddenly shut its plant in Monmouth Junction, New Jersey, last week with the loss of 100 jobs, or maybe 200 (the company was not quite sure how many employees were there).

Within days of that closure, and having dropped the price of the Osborne 1 from \$1,995 to \$1,295, the company announced it was laying off 203 people at its head

office plant in California. This move reduced the workforce from over 700 to 500.

The prime cause of the trouble appears to have been mistiming of the market entry of the Executive 1, the portable successor to the Osborne 1.

The Executive, for which Osborne refuses to give sales figures, virtually destroyed the Osborne 1 market overnight, and the company's \$700 price cut is a belated response to what has been happening in the market place for months.

## Boots bid for home market

by Caroline Burgess  
SPECIALIST computer centres are to be set up in 32 branches of Boots in a drive to make it the largest home computer retailer in the UK.

Boots aims to increase turnover on micros from £20 million to £40 million and hopes for a 10% share of the market by the end of the year. The home computer industry is growing rapidly with sales of one million units this year estimated.

About 250 of Boots' 1,000 outlets will stock home computers. All their staff will be given special training and computer consultants will be appointed to the 32 up branches.

Sinclair Spectrum, Dragon and Commodore are among the main which Boots markets, and up branches will soon offer the BBC micro. All branches will stock a least two models.

Boots is also looking at the possibility of selling the Acorn Electron.

W. H. Smith is at present the largest home computer retailer.

## Micro maker hits trouble

MIDDLESEX-BASED microcomputer manufacturer Information and Technology Computer Services, formed only two years ago, is in financial trouble. It has lost 28 of its 29 staff, and its sister company, ITCS Ltd, has lost about five staff, including its marketing and technical director.

Information and Technology Computer Services manufactures the Zita P Portable microcomputer and the Alpha micro.

## Micro giants prepare for price war

by Claire Gooding  
THE microsoftware giants are shaping up for a price war in which the cost of user-friendly computing could fall dramatically.

Digital Research, the originator of CP/M, is wooing major manufacturers with VIP, a cheap and cheerful version of the "window" technique which could sell to the mass market for as little as £25.

Up to now the window technique has only been available in high-priced systems such as Apple's Lisa and Xerox's Star workstation.

Digital Research is bringing the idea to the lower end of the market, where users of single-user systems running floppy discs and less than 256K will be able to benefit from the "windows", as well as being able to control the cursor through a "mouse".

Both techniques are notoriously power-hungry and have only been available to users who can afford to look higher up the market at hard disc systems.

Digital Research itself is uncharacteristically quiet about VIP, the Visual Information Processor. The system is intended to be totally portable, separating the applica-

tions from the hardware on which they run.

Few have seen the system in action, but it is said to sit underneath the planned Monarch applications environment creating a video interface which handles the various processes and displays them on the screen simultaneously without interrupting processing.

British manufacturer Acorn and giant Commodore are among the companies thought to be interested in supplying the cheap window system. Both admitted that they were looking at products and talking to Digital Research, but

Leader Comment - page 11

were at pains to make it clear that no commitment was made.

"It's a corporate policy that as from three weeks ago we don't talk about products which don't exist," said Commodore marketing manager John Baxter. "I've seen something running but that's all I'm saying." Adoption of VIP would, however, fit in with the avowed intent of Commodore to become a software company selling user-friendly software through third parties.

Commodore is thought to have

embarrassed Digital Research by putting software called "Magic Desk" on show at Comdex. According to observers, the software was remarkably similar to the VIP and Monarch systems which Digital Research has been trying to keep under wraps.

Digital Research has put its shirt on the "concurrent" approach, recently endorsed by IBM for use on the Personal Computer. Rival firm Microsoft, whose MS-DOS operating system is used as the native operating mode for the PC, is now scurrying down the multi-tasking route and is planning to introduce "window" facilities into the third release of MS-DOS.

Microsoft's attitude is that Digital Research is planning a massive loss-leader if the rumours that it will licence VIP to manufacturers for as little as \$10 are true. Certainly the enterprise would take Digital Research into unknown territory, with all the problems of mass distribution and support.

However if manufacturers can be persuaded that the video interface route is a profitable one, Digital Research could be on the way to regaining its dominant position in the microsoftware industry.

## ICL unions threaten overtime

by George Black  
ICL's recent return to profit is threatened by a nationwide escalation of the pay dispute next week.

The negotiating committee of the four unions involved, which represent 60% of the firm's staff, said they would be recommending rejection of the management's improved offer.

ICL increased its offer of 3 1/4% on basic pay coupled with 3 1/4% on merit bonus to 4% on basic and 3% on merit.

The unions had previously rejected the offer because they said the proportion of the money included in the bonus was too high.

A one-day strike on July 28 against the management's "intransigence" was supported by between 2,000 and 2,500 workers after the first official offer had been turned down on a 5-1 vote.

A national overtime ban is one of the options the union leaders will be considering if their members accept the recommendation to reject the latest offer next Monday.

Brian King, of TASS, the engineering union AUEW's technical section, said an overtime ban might be regarded as inequitable by some members so alternative courses were being looked at. He described the improvement

to 4% as "just a question of shifting money from one pocket to the other".

Overtime bans have been operated at the firm's Ashton-under-Lyne (Manchester), Letchworth (Herts) and Kidsgrove (Stoke-on-Trent) plants, involving 500-1,000 workers. King said the stoppages were occurring spontaneously because members were disgruntled with the company's position.

ICL said its latest move allowed "a little leeway" for local salary adjustments. The pay review affects 12,000 staff.



BAILEY... "All sorts of problems."

## Union steps up action to hit Mercury owners

by Nuala Moran  
THE Post Office Engineering Union (POEU) has stepped up its industrial action against the three companies which own Mercury, the private telephone network.

Branches in London were issued with instructions to refuse to work on all installation and maintenance work on telephone and data transmission equipment at buildings owned or occupied by BP, Barclays Bank and Cable and Wireless, starting from last Monday.

The buildings affected are BP's headquarters, Britanno House at Moor Lane in the City, Barclays' headquarters at Lombard Street, together with its computer centre in Tottenham Court Road, and all of Cable and Wireless' four London offices.

A spokeswoman for the POEU said the idea was to hit the owners of Mercury rather than other customers of BT.

Mercury sales director Stuart Bailey said he was reluctant to comment on an issue that was affecting Mercury's parents rather than the company itself.

Sandy Skinner, Mercury's marketing communications manager, added: "We have an absolute unequivocal assurance from the shareholders that this doesn't affect their investments."

There are still 15 union members on strike and three suspended, following the POEU's last spate of industrial action. This took place in June as a protest against BT management making a connection at Mercury's headquarters in Longacre. These members are receiving the equivalent of full pay from the union.

## DEC loses two more top managers

DIGITAL Equipment has lost two more high-level managers. Michael Dillon, ex-marketing manager for DEC's personal computer line and the man responsible for direct sales of those products, has left DEC to join another computer firm in nearby Lowell, Massachusetts.

Ulf Fagerquist, who had been heavily involved with hardware and software development on the Decsystem 10 and 20 product lines, has left to join a fairly new firm in New York.

The departures follow by several weeks the departure of Gordon Bell, long-time vice-president of engineering for DEC.

## National's first

NATIONAL Advanced Systems made the first installation in Europe of its 7380 Disc Storage Subsystem; its direct rival to the IBM 3380, this month. The installation, at Unilever Computer Services, is part of an equipment evaluation procedure by Unilever.

## Intertec sackings

INTERTEC Data Systems, the Californian manufacturer of the Superbrain eight-bit microcomputer, is to fire 30% of its production staff. The company is in the interim phase between slowing production of the Superbrain and the launch of its new micro next January.

## IBM case goes on

IBM last week kept the fires burning in its civil case against Hitachi and National Advanced Systems. New allegations expand the earlier charges by claiming "senior management" of both companies "approved joint efforts" in intelligence gathering operations.

## Top brain quits DEC for Apollo

by George Black

ANOTHER top executive has left Digital Equipment Corp, as the leading US mini manufacturer prepares for a huge morale-boosting sales conference in Boston.

Latest to leave is corporate planning vice-president, Larry Portner, who is going to up-and-coming Massachusetts neighbour Apollo Computer after 19 years with DEC.

Portner said he was "interested in the excitement of a small company and the ability to get things done quickly, a place where there is still entrepreneurial drive".

DEC had undergone a major structural change in the last year, he said, but that had not been an issue for him, as he had been thinking of a move before that.

Only two weeks ago engineering vice-president and Vax mastermind Gordon Bell left to join another new firm in the same area, Encore, led by former Prime president Ken Fisher and Data General

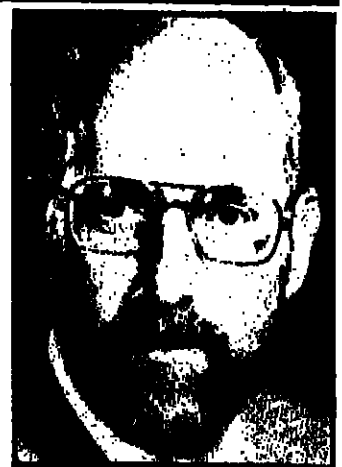
founder Henry Burkhardt.

Apollo, which predicts a jump in turnover to between \$70 and \$80 million this year, is crowing at the capture of Portner, who was DEC's product planning brain. He has taken up the post of research and development vice-president at Apollo, alongside Michael Greata and David Nelson.

DEC, meanwhile, is gathering 7,000 staff from around the world to its first sales symposium to discuss strategy for the new fiscal year.

The week-long event, to be addressed by president Ken Olsen, is spiced to a DEC trade show at Boston city auditorium beginning on August 22. Up to 1,000 European delegates have been speculating what Olsen will reveal about the restructuring of the management team after recent departures, as well as moves to strengthen communications with the men in the field.

DEC's System 10 and System 20



PORTNER... Resigned.

users still wait for a response on upgrading their mainframes. The firm promises an answer "in the next few days". The Vax-on-a-chip project, which it has not yet officially announced, is rumoured to be running behind schedule.

Apollo has just announced first quarter income of \$17.6 million to the end of June, with profits of \$3.8 million. Last year, despite going public "over the counter", it made only \$300,000 profit out of \$18 million turnover, mainly due to heavy factory investments.

## CDC produces Cray rival in battle of the giants

by Kevin Cahill

CONTROL DATA Corp, until last October the only rival to Cray Research true supercomputers, has belatedly announced a successor to the Cyber 205, and a challenge to the Cray XMP, or Cray 2.

The Cyber 205 has a working throughput about equivalent to the mid-range speed quoted by Cray for the Cray 1, and the XMP.

The Cray 1 peaks at 1,000 million floating point operations per second (flops), but runs in work environments at between 140 and 200 Mflops. A floating point operation is the computer equivalent of a simple decimal addition sum.

The XMP, which is the compatible successor to the Cray 1, peaks at 2,000 but is quoted by Cray Research at 200 to 400 Mflops in a working environment. The 205 is quoted by CDC as running at 400 Mflops. This is just behind the working rate of the Cray 2 which can peak at 10 times that speed, but runs at 400 to 600 Mflops.

The first Cray 2 is due for delivery to an unnamed customer in the US by the end of this year.

The 2XX, as the successor to the Cyber 205 is called, is not due until 1987 but has a peak Mflop rating of 10,000. In a working environment this is expected to mean 1,000 to 2,000 Mflops.

The CDC 2XX represents a step down the multiprocessor route currently being followed by many computer manufacturers, and like the Mflop rates, the 2XX which combines eight processors into one CPU.

Normally, there is a substantial loss of effective speed as the number of processors in a configuration grows, but CDC says that by 1988 advances in software will make parallel, multiprocessor architectures considerably faster.

They will have to do so to make the fivefold increase in speed which CDC anticipates will have been achieved in each of the eight Von Neumann processors which

make up the 2XX.

The 2XX will be based on MOS gate arrays with about 20,000 in each array, and will be cooled by liquid nitrogen, making the logistics of the machine slightly cumbersome.

The predicted gate density is also half that currently achieved by Dr Gene Amdahl in his new Trilogy chip, which is now in preliminary production and which will be the heart of the Trilogy mainframe, due in 1985.

By sticking with CMOS, CDC has avoided the risks, but also the rewards, of going down the increasingly fashionable gallium arsenide route.

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# Datapoint looks to telecomms

by Donald Kennett  
THE progress of the government's liberalisation programme in telecommunications has encouraged the UK subsidiary of Datapoint to set up a telecommunications division.

Marketing executive Glyn Jones said: "We're at the stage in the approval cycle through the Department of Trade and Industry (DoTI), where we can go ahead with installing test systems. We are confident we will get approval for the first products in a few months."

The first product will be the ACD automatic call distribution system, which uses a standard disc-based Datapoint 6600 mini to control telephone switching devices as it would any other peripheral.

It will cost about £2,500 a telephone extension and its main advantage over the key-and-lamp units traditionally used by telephone sales teams will be the range of management information packages that will be available for it.

Since the 6600 is one of the processors that attaches to Datapoint's Arcnet local area network, it will be possible to interrogate the ACD from any workstation on the network, according to marketing services manager Alan Watson.

"The managing director can see

# Police urged to use micro package for murder hunts

by Paul Walton  
POLICE are being urged to use a specially-written microcomputer package to run major incidents, like murder investigations, while a more sophisticated Honeywell mainframe system is being tested. And the Home Office is putting up money for forces to install suitable hardware to run it.

Autoindex from Microproducts Software is the CPM-derivative package commissioned by the Home Office, following the controversial Yorkshire Ripper enquiry which took so long to complete.

It improves the handling of large amounts of data held on card indexes and increases the chance of making connections that may lead to possible suspects.

Police in several forces will now be better able to work together, sharing data in major incidents, using Autoindex.

Written in the BOS dialect of CPM, it will be able to run on most of the standard microcomputers that are presently employed

by the police. Essex police are just beginning to test the capabilities of Honeywell's more sophisticated Miriam incident system.

There are already plans to cut its prohibitive cost by developing a cheaper microcomputer version. But in the meantime, Autoindex is the only incident room package on offer to the police.

A Home Office circular put forward Autoindex - which has already been tested on the UK-built Trivector microcomputer - but it said that the software would not be used in the present Maxwell/Hogg murder hunt.

Autoindex is a structured file system. It ensures that any piece of data that occurs several times in one or more sets of records is noted as being significant.

But Autoindex does not have the sophisticated free text retrieval ability of Miriam, where incomplete scraps of data can be monitored automatically.

Autoindex is believed to cost several hundred pounds.

The Home Office will pay half of the capital costs involved in setting up new systems of three to four terminals for forces which do not have the hardware already.

Data is shared between forces by special secure phone links.

A Honeywell spokesman said that both incident packages could be used by the police at different levels.

"Autoindex will appeal to those authorities that cannot afford or justify the use of Miriam," he said. Honeywell wants to bring down the cost of Miriam from hundreds to tens of thousands of pounds, by developing a version to run on its new, cheaper DFS-6/10 and /20 microcomputers.

The Home Office said that Autoindex was "an interim solution".

One part of the Essex trials of Honeywell's Miriam will be a feasibility study of regional, national or even microcomputer versions of the sophisticated package, conducted in an attempt to bring down its price.

# Select your own choice to be awarded a Rita

NOMINATIONS now are being accepted for two major awards for the UK computer industry. Awards for "Systems Innovation of the Year" to be sponsored jointly by the National Computing Centre and Computer Weekly, and "Newcomer of the Year", sponsored independently by Computer Weekly, will be given under the Recognition of Information Technology Achievement scheme (Rita).

Nominations in each category will be presented to a distinguished panel of judges, with the winners being announced at the Rita awards dinner in Birmingham on January 17, 1984.

The division and its products will make their public debut at the Association annual conference next month. "Their 600 delegates have a £2 billion a year spending power and we are looking to get a small percentage of that," said Watson.

Included in the products to be demonstrated will be the TDP Arcnet and is used by the BBC's 30 of 20,000 internal telephone users on three sites.

Arcnet was recently installed on its 200th site in the UK, at Manchester-based Ford dealer HJ Datapoint processors on 15 sites. Worldwide installations have reached 5,000.

September 30, 1983. Judging criteria will be relatively open-ended, but can include: financial performance (where available), market penetration, employment opportunities, innovation, and initiative and imagination.

The company must be of UK origin, and should be involved in the provision of hardware, software, or services to the information technology market. "Systems Innovation of the Year" will be awarded to that complete system, component, peripheral or part of a system which is judged to be the most outstanding example of achievement in the field of information technology in the UK during 1983.

The equipment or systems must be available in the UK during 1983, and the innovative element in the system must be wholly or predominantly of UK origin. Software alone and word processing or office systems are precluded as they are covered by other Rita awards.

Companies or individuals cannot nominate themselves. Members of the staffs of Computer Weekly, the National Computing Centre, and Clapp & Pollak may not enter.

In each award category, a case of

wine will be awarded to the person who first nominates the ultimate winner. In addition, the first person in each instance who nominates one of the two runners-up will also receive a case of wine.

Nominations should include a short statement explaining why the company or individual should be judged the "Systems Innovation of the Year" or "Newcomer of the Year". Nominations must be received by Computer Weekly before or on Friday, September 30, 1983.

Judges for the Rita awards 1983 are: Doug Eycions, director general, Computing Services Association; David Pirnberg, deputy president, British Computer Society; David Fairbairn, director, National Computing Centre; Ted Cluff, secretary general, Institute of Data Processing Management; and Dr Paul Freeman, director, Central Computing and Telecommunications Agency.

There are six other Rita awards in addition to those sponsored by Computer Weekly and the NCC: Software Product of the Year; Office System of the Year; Supplier of the Year; User of the Year; Personality of the Year; and Best User's Training Method of the Year.

**RITA** Recognition of Information Technology Achievement  
**AWARD**

Return this form, to arrive by first post September 30, 1983, to: Linda Allen (Rita Awards), Computer Weekly, Room L218, Quadrant House, The Quadrant, Sutton, Surrey, SM2 5AS.

I wish to make a nomination for the Newcomer of the Year/Systems Innovation of the Year award. (Please delete where appropriate. If you wish to nominate in both categories, please photocopy this form.)

My name \_\_\_\_\_ Job title \_\_\_\_\_  
Company \_\_\_\_\_  
Company Address \_\_\_\_\_ Telephone \_\_\_\_\_  
My nomination is (Newcomer or System): \_\_\_\_\_  
Company Address (full postal address if possible) \_\_\_\_\_  
I attach a short statement explaining why my nomination should win. \_\_\_\_\_  
Signed \_\_\_\_\_ Date \_\_\_\_\_

## SALES BRIEF

### Nixdorf takes three orders for the 8870

NIXDORF last week took three orders for its 8870 range of mini, bringing total UK sales this year to over 50, worth between £2 million and £3 million.

The Delson Group ordered a system with Nixdorf's Comet software for £97,000 for control of its stock of industrial fasteners. Farr Filtration, maker of air filters, ordered a model for management statistics, and Scottish shoe maker William Smith has bought one for stock control.

### College contract

PRIME has picked up a big order for five minis under its £4 million education programme of subsidy for schools and colleges. Essex County Council has ordered five Prime 2250 minicomputers to be installed at technical colleges throughout the county.

### Fashion project

DEBENHAMS computer subsidiary DISC and Universal Computers have combined in a £200,000 project to provide a large fashion house with a stock control package. The system, including a £48,000 mini from Universal, will be installed at the Croydon HQ of London Manufacturing and Supplies which markets fashion wear to 130 UK department stores, including 70 in the Debenhams chain.

### Solicitors buy

HOME Counties legal software specialist Miles 33 last month signed five contracts worth a total of £250,000 for its Solicitor's Office Management System. Buyers included Withers, one of the UK's biggest firms of solicitors, which is having the system tailored for Trust Accounting File and Deeds Register in a contract worth £100,000.

### Synapse chosen

UK SOFTWARE house Synapse Computer Services has been commissioned by the leading maker of liquid fertilisers, Chasfer, to provide software support for an IBM 4331 mainframe installation. The system runs under DOS VSR and gives online and batch communications through CICS to a DLI data base.

### Unilever picks

GIANT UK industrial group Unilever has picked STC Business Systems for equipment worth £50,000 to automate the existing manual telex link. STC will supply the 6100 text communication system, which will also link wordprocessing facilities into the company's communications network.

### Hoskyns signs

HOSKYNs has signed the first two contracts for its new range of financial software for IBM users, announced last month. The two orders, with total value £100,000, come from the London-based Raybeck Group and Pirrell of Burton-on-Trent in the Midlands.

### Rediffusion deal

REDIFFUSION has sold data preparation equipment worth almost £100,000 to two London boroughs. The Metropolitan Borough of Calderdale has bought a R2800 Teletype system for £42,000 and Hounslow has ordered a larger version for £52,000.

### Second Harris

ASTON University is spending some of its £1 million for improving library and computing services on a second Harris computer. The first machine installed last year had become overloaded. The two machines will be coupled.

# Cable & Wireless gets on US rails

by Donald Kennett  
CABLE & Wireless is working on a series of Mercury-like trunk telecommunications networks in the US.

Chairman Eric Sharp said "Agreement has been reached with one US railroad, and discussions are well advanced with another, for the formation of joint venture companies to promote the use of railroad rights-of-way for telecommunications purpose primarily using buried fibre optic cable."

Sharp added that his company was in discussion with other major railroads to establish similar agreements. The plan is to build a series of regional networks in groups of communities, rather than coast-to-coast long distance routes which

the company feels are well covered by independent competitors.

Sharp said that the company's turnover in the US had increased by more than a third in the last year. The US and the UK were two of the world's major potential growth areas, he said, and increasing deregulation in the US was opening up new markets where the company could employ its expertise.

A third potential area was China, where C&W had formed one joint venture with Chinese partners two weeks earlier.

The company had also acquired nearly 35% of the Hong Kong Telephone Company and had put three executives on its board.

Sharp said it was important for

shareholders to realise that the new business opportunities the company was pursuing required investments that would not always produce immediate earnings.

The accounts to the year ended March 31 showed the company's performance in the first full year since it was privatised in November 1981. Sharp said. Privatisation had set a pattern for progress which had been evidenced by the establishment of new businesses and by record profits. Profits grew 76% to £157 million on a turnover that grew 15% to £403 million.

The chairman's performance - reflected in these figures - was rewarded with a 114% salary increase, from £52,245 to £111,952.

# Stagnant teletex is expected to grow

by Nuala Moran  
TELETEX, the system for instant transmission of documents between terminals anywhere in the world, has made little progress towards being a viable service in the three years since it was introduced. Furthermore, its acceptance by the user community is non-existent.

This is the conclusion of a report on teletex to be published soon by the Yankee Group of consultants.

According to the report, the last two years have been especially discouraging, with almost no developments of any significance.

Despite this, the Yankee group says the rate of installation of

teletex terminals will increase rapidly in 1983, going from 1,500 to 8,000 worldwide. Almost exponential growth is forecast for the years between 1985-1988, and by 1990 there will be a million terminals in Europe and 750,000 in the rest of the world.

This is a very fast growth and the Yankee Group says there is a good reason to be optimistic. It picks three things which it believes will fuel growth.

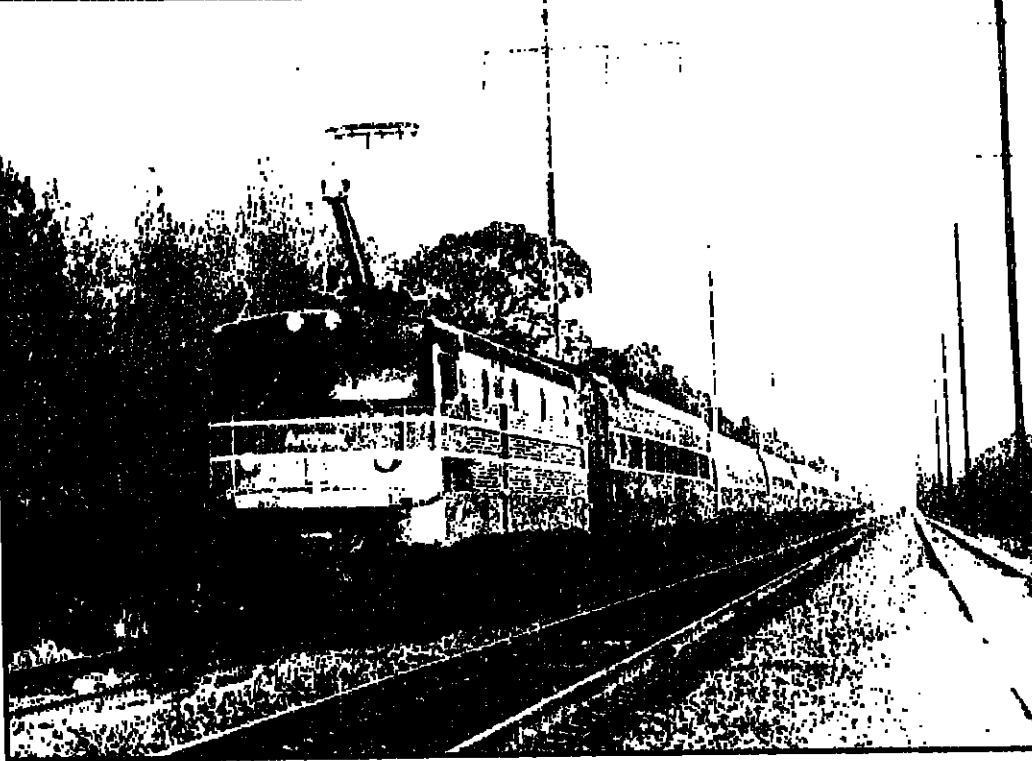
The first is that telex standards will soon be available so that users can have boards inserted into installed terminals to make them instant teletex terminals.

Secondly, 19 countries and their

telecomms bodies will support the standard, so it will be acceptable to the market place. The third factor will be compatibility with telex.

Paradoxically, one of the main factors which the Yankee Group identifies as fuelling teletex growth in Europe is the lack of awareness the group say European managers have of the advantages of office automation.

This will work strongly in favour of teletex, according to the report. "Because European companies tend to have less installed office automation equipment they can look to teletex as the first step to more advanced technologies," it says.



Cable & Wireless wants to lay down fibre optics alongside US railways.

# CAD agency is born

by Philip Hunter  
THE growing market for computer aided manufacturing and design (CAD/CAM) has spawned its first specialist recruitment agency.

The company, called CAD Search, has been set up in London by three ex-directors of a general recruitment agency, continuing a trend towards more specialisation among computer job agencies.

The company has scored an early success by quickly finding ICL a CAD systems manager. "ICL rang up - they had been looking for three months," said David Hendry, one of the three founding partners. "We found him."

Hendry is looking to turn over

£180,000 in his first year, which at an average of £2,000 for each placement means filling 90 vacancies.

There are in the UK about 1,000 CAD specialists, plus another 2,000 or so programmers working on CAD/CAM applications.

"But there is a demand for far more people," commented Hendry. "There is a particular shortage of senior CAD/CAM people worth at least £15,000 a year who can really make CAD systems work," he continued. Because of the shortage, users are pinching staff from the vendors, which only makes the problem worse.

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TECHNOLOGY INTELLIGENCE



## TRAK's course is the tops with 89%

by Nuala Moran  
A STEEL worker who was made redundant several months ago will go back to work soon as a microcomputer engineer. He has just completed a 20-week course run by TRAK, the training arm of Kalamazoo, the Birmingham-based business systems company.

Fifteen of the 17 other students on the course found jobs before it was even over, including one who is going on to train other people in micro maintenance.

The course is backed by the Manpower Services Commission as part of the Tops training opportunities scheme. It is designed to give people skills in microcomputer servicing, leading to careers in micro engineering.

Placing 89% of the students before the course was over broke all records at Kalamazoo's training headquarters. The Tops national average for people getting jobs is 43%.

A spokesman for Kalamazoo explained that the company was aware from its own experience and from contacts in the industry that there was a shortage of skills in micro engineering.

Kalamazoo used its own expertise to set up and design the course. Following the success of the first course, another will be run later this year, and a further one early next year.

Students on the course were selected by Kalamazoo. They all had some experience in electronics or engineering.



Course students run through a test procedure - 16 of them have found jobs.

The course is run by two teachers. One is seconded from Kalamazoo's manufacturing division, and guest speakers are invited to contribute.

Kalamazoo has over three years' experience running Tops programming courses. At the moment it is looking at requests from other companies to train staff. This includes requests from competitors of Kalamazoo.

The spokesman emphasised that the course is not one in how to service Kalamazoo machines. But such training courses do work wonders for the company's reputation.

As the spokesman said: "People who are Kalamazoo trained remember where they got their training."

## UK micro firm flirts in failsafes

by John Riley

A SMALL British microcomputer company is set to make a foray into the failsafe computer market. Orington-based BCU Computer Services in Kent expects to sign separate deals in the next few weeks with two new US companies that would give BCU total UK rights to their fault tolerant systems.

The US companies, No Halt Inc of Farmingdale, Massachusetts, and Parallel of Santa Cruz, California, were both founded by men who worked on the NASA space programme. The systems from the companies are still in final testing stage, but BCU plans to make the first launch of the products at the Conexpo exhibition this autumn.

BCU, which was founded 10 months ago, has been building up its capital to enter the failsafe market by distributing a wide range of software packages and Teletext micros.

"We looked for micro systems built to mainframe fault tolerance," said BCU's technical director and former IBM man, Phil Clarke.

Clarke was confident that the No Halt and Parallel systems would fit BCU's specification. BCU has sent a team to the US to try to "crash" the products, Clarke said. "We've been invited over to break them," he said, "but the manufacturers are confident we won't."

BCU plans to chase the lucrative IBM System 34 upgrade market with the machines. A large number of compilers are offered, including RPG. Clarke envisaged no problems for existing System 34 users moving across to the fault tolerant machines: "There will be no problems with screen handling," he claimed.

The multi-terminal No Halt machine is based on a Z80B chip, and an Intel 8086 can be added.

Clarke said it ran TurboDOS Unix, as well as CP/M and PC-DOS. Entry price was expected to be around £15,000 and the base speed with the Z80B chip was 1 MIPS with 128 Kbytes static RAM, he added.

The Parallel is MC 68000 based with a base speed of 4.5 MIPS and is Xenix based. Entry price is expected to be in the region of £30,000.

Both systems were both hardware and software fault tolerant, said Clarke. "If a board or a disc blows, then the machine will automatically configure the rest of the system so that you can replace them while the machine is still running."

"On replacement they will automatically reconfigure. If the power supply goes and the battery backup is ripped out, there is a enough latent power to do everything in storage on disk," he explained.

## High flier's F International career ends with acrimonious injunction

by Philip Hunter

JANET Lennon's high flying career as a regional sales manager for software firm F International has ended sourly, with an interim injunction stopping her from starting her next job.

Her five-year term with F International had been flushed with success. In 1981 she reached the final of the national "Salesman of the Year" contest and then in 1982 she went one better by winning the ICP "Super Software Seller" award.

But when she gave her six months' notice in June, she was told to leave at once without working out her notice.

F International then sought an injunction to prevent her starting with the new, rival company, Dator Management Services, until December 23 1983.

The court will not give the case a

full hearing until October, but has meanwhile issued an interim injunction to stop Lennon taking up her new post.

F International chairman Neil Pollock said the company had sought the injunction because it believed Lennon and others were using confidential information to help the new business.

F International employs a lot of freelance programmers and analysts. Pollock claims Lennon and other members of Dator had offered these freelance people work by using F International's own list of their names and addresses.

F International had also sought injunctions against Dator chairman Nils Elrin and others to prevent them from using so-called confidential information. This application was later withdrawn when the defendants agreed that

they would not breach any code of conduct.

Elrin admitted having previously used the list of names and addresses taken from F International, but still denied that they were confidential. "It's not a confidential list," he said. "The names and addresses are public knowledge."

The list was, after all, of freelance staff, continued Elrin, and therefore could not be the exclusive property of one company. Elrin suggested that F International had overreacted to the case because of recent discontent in the company, which has resulted in an exodus of key staff including several to Dator.

Pollock has also accused Lennon of trying to poach his permanent staff. Lennon and Elrin dismissed this as rubbish.



GOODE (right) ... "Tandem is just the vehicle for the software." On the left is Phil Bailey, Tandem's northern branch manager.

## Tandem replaces eight

by Donald Kennett

SCOTLAND'S Trustee Savings Bank appears to be bucking the trend towards distributed systems by removing the eight Philips minicomputers in its automated teller network and replacing them with a single dual-processor Tandem.

But the Philips machines will be snapped up immediately by the bank's counter terminal network, making it even more distributed than it is at present.

TSB's data processing manager, Chris Goode, said that Philips autotellers and controllers would continue to be used in the reconfigured network and that the main

reason for the change was to install Applied Communications' Base24 software, which runs on Tandem NonStop hardware and is claimed to support nearly half the automated tellers in the US.

"The Tandem is just the vehicle for the software," Goode said.

The software will allow a fuller range of banking services to be provided through the autotellers 24 hours a day, because it will maintain a subset of the database from the Burroughs mainframe locally on the Tandem.

This will enable the 100,000 customers with Speedbank cards, to make current balance enquiries.

## UK/Japanese make joint venture

by Caroline Burgess

ONE of the first British/Japanese joint ventures in graphics has been established late last month. It aims to extend the exchange of new ideas and technology between the two countries.

A 50/50 joint venture company named Sigma-Sellac has been formed by the British company Sigma Electronic Systems, and Sellac of Japan.

The idea for the venture stemmed from a visit to Japan by Sigma's technical director, Christopher Wheeler. Sigma-Sellac aims to develop and produce a range of advanced new products to enhance Sigma's current range.

It also aims to develop a manufacture 2D and 3D graphic products, although no joint products are yet available.

Sigma Electronic Systems of Horsham, Surrey, is a British-based European manufacturer of computer graphic equipment with newly formed subsidiaries in France and Germany.

Sellac is a two-year-old Japanese company, which is claimed to be the fastest-growing high technology company in Japan. It entered the US market for the first time this year with its Sellac 7, a 3D colour display system, the price of which, according to Sellac, is about a quarter of those of its competitors.

## SOFTWARE FILE



## Best system baa-none for the farmer

SUSSEX farmer Michael Hurford has written his own programs to help with his lambing. They run on an Epson HX-20 portable micro and keep track of his flock of 400 ewes at Pulborough.

He hopes to sell them to other farmers through Epson dealer Stofield of Horsham.

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## Japanese wake up to APL

by Claire Gooding

JAPANESE interest in the high-level language APL is about to take off, fired by low-cost versions designed to run on micros. British APL supplier MicroAPL has already signed a high-volume agreement with APL Consultants of Japan Ltd. And major APL bureau STSC, parent of APL\*Plus, is also negotiating Japanese outlets for its products.

APL has a strong but silent presence in Japan, where IBM's grip on the mainframe community has brought the language into one in three mainframe installations.

Since the language has crept in as the main ingredient in IBM's Information Centre packages and is almost exclusively associated with IBM, it has taken a while for Japanese users to realise how much APL can do. Now that micros have breached the traditional APL mainframe territory, the Japanese have recognised its potential.

APL is in effect a mathematical notation - hence the hieroglyphics adored by APL enthusiasts and deplored by APL critics. For once the hieroglyphics work in APL's favour, since they make it easy for Japanese users to get to grips with concepts rather than

translating from Western computer languages.

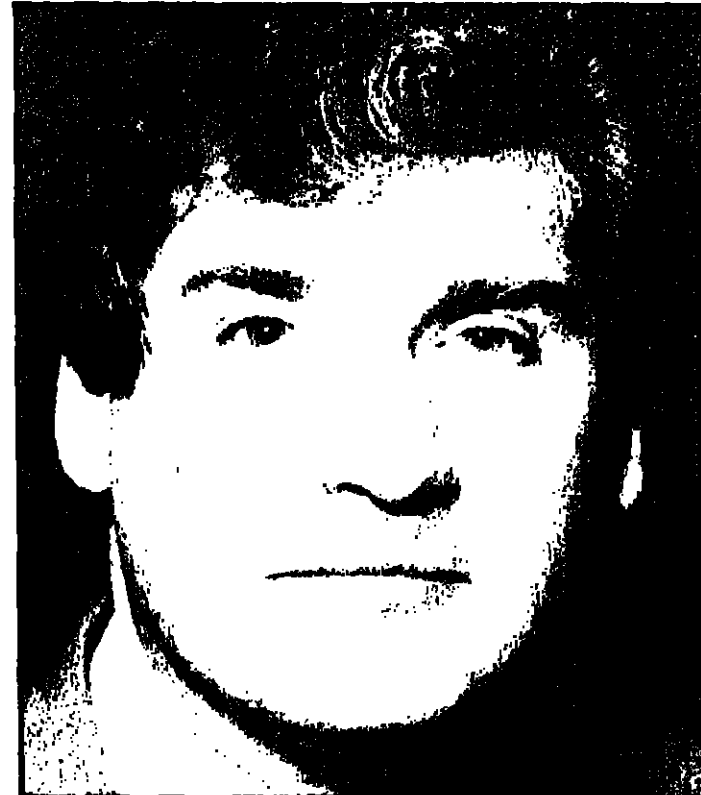
APL Consultants will be marketing the Insight terminal and keyboard fitted with the APL character set, along with the MicroAPL software.

Kyosuke Saigusa, former head of IBM's APL division in Japan, who now heads APL Consultants, plans to introduce a Kanji version of the Insight terminal. "Although there are many Japanese terminal manufacturers," he said, "they do not understand the needs of APL users."

MicroAPL sells the terminal as part of the APL 68000 product, which runs in the UK on the TDI Sage and MicroAPL's own Spectrum machine (nothing to do with Sinclair's micro of the same name). It is a fast machine-code implementation of the language, originally written by The Computer Company of Richmond, Virginia, and enhanced by MicroAPL in the UK.

MicroAPL recognises that the Japanese market is not an easy one to crack, but according to sales engineer Adrian Fletcher, the time is right for APL to take off.

"It's early days yet, but as personal computing gets under way in



COCKING... "Opportunity in Japan must be phenomenal."

Japan APL will come into its own in such areas as financial planning and operational planning," he said.

"One of the main reasons Japanese users find the language attractive is that it doesn't deal with constructions like DO WHILE and IF THEN ELSE, which tend to be less meaningful in Japanese."

APL consultants Cocking and Drury agree that APL is ready to take off in Japan. "APL is already quite big there," said co-founder Romilly Cocking. "Micros are the big opportunity in Japan for APL. Given the expansion of the market there, the opportunity for micro

sales of APL in Japan must be phenomenal."

Few details are available about STSC's plans to sell its products in Japan, but the IBM PC version of APL\*Plus packages are obvious vehicles for its long-planned push into Japan.

APL bureau APL\*Plus is sharing its IBM products in a joint marketing agreement with APL Consultants Cocking and Drury. The packages concerned in the scheme are the APL\*Plus PC interpreter, the financial planning system FPS and the APL\*Plus interpreter for the Tandy TRS80, which start in the £275 range.

## Tom takes the Unix route

by Claire Gooding

THE Office Manager, supplier of business applications for Wang users, is chasing the Unix bandwagon. TOM has announced a Basic language interpreter, TOMbasic, which takes the company down a different route from that used by most companies implementing their software under Unix.

TOM has signed agreements with five manufacturers whose names are already strongly linked with Unix, Altos, Fortune, Pixel, Plexus and Prime. Other agreements are in the pipeline, all involving Unix-based systems. At present only Speed I, the software built for the Wang 2200 series, is being converted but the product has been around long enough to spawn a large range of applications which are badly needed among Unix users.

Applications already available through the interpreter include business management, accounting, residential and commercial construction, restaurant and property management and distribution packages.

Wang's slightly quirky implementation of Basic is the factor that gave Speed I its power and flexibility when it came to customising applications. The string-handling facilities are particularly significant, and it is to preserve these and other features that TOM went to the immense effort of several man-years re-writing the Basic to run with Unix systems and the C language.

"We have duplicated the Wang Basic as far as possible," explained Bob Minger, Wang's director of Mid-West and Canadian operations. "Some changes had to be made, which cut out some of the low-level language operations, but they were not severe."

## DG Desktop adopts the EasyFamily

THE new Data General Desktop Generation computer is to run the EasyFamily of products already endorsed by IBM. Data General is putting its own logo on the products from Information Unlimited Software Inc, which includes EasyWriter, EasySpeller, EasyFiller, EasyPlanner, and the EasyBusiness range of financial and accounting applications. All run under MS-DOS on the IBM and Tandy Instruments PCs, and IBM supplies EasyWriter under its own name.

As yet the agreement has not been extended to the UK.

Quin maintains that The Strategist has a lot of its own in a market that is already crowded with planning and problem solving.

Quin emphasises that The Strategist, which costs about £250, should not be relied upon to do the detailed planning and estimation for any venture. "It's a kind of finger in the air - or like the scribble on the back of an envelope: the starting point of a planned operation. I wouldn't recommend anyone to use The Strategist other than as a generalised business model. Once you've reached the point of predicting the breakeven point then the plan should be put to a more sophisticated financial planning system for verification."

To produce this "finger in the air" software Ashton Tate worked on a standard model for business development, varied by 16 sub-models.

A product or venture can be put

## Peachtree goes multi-user

PEACHTREE's financial packages can now be run in a multi-user system on Philips P3500 micros, using a new version of Fileshare from Micro Focus.

Version three of Fileshare now runs with Philips' TurboDos operating system, allowing Peachtree users to work more efficiently with up to four people accessing the same files simultaneously.

Previously Fileshare's multi-user feature was limited to machines running Digital Research's MP/M operating system. With Fileshare several users can update files simultaneously with no danger of corrupting data; individual records within a file are locked automatically by Cobol input and output statements.

Micro Focus marketing manager Peter Hewitt said Fileshare would take up to eight users, depending on the limits of individual operating systems.

Fileshare's first two versions have gone down well at British Telecom and with a number of small concerns such as insurance brokers where multi-tasking is crucial.

Peachtree meanwhile has been considering how to establish itself firmly in the growing multi-user



HALE... Move into the multi-user world.

environment, so that different departments - manufacturing, sales, despatch, etc. - can update files at once without fear of mistakes. Fileshare, which Micro Focus announced two years ago - ahead of its time, before multi-tasking became a burning topic - could prove the answer.

Peachtree managing director John Hale commented: "Why should any firm have to spend a lot of money on a mini when they only want a few users to operate at once? Fileshare is going to help us to move into the multi-user world for the first time."

The P3500 now has 180 UK sites, 50 of which have already upgraded to multi-tasking.

## 'Finger in air' aid to business planners

DATABASE supplier Ashton Tate's latest offering, The Strategist, has just been launched in the UK as a business aid to planners who want to evaluate how successful particular projects or products will be.

"The difference in The Strategist is that all the programming is already done. The assumptions are built in to the structure and all the user has to do is enter the actual figures," explained Skye Quin, product manager for The Strategist.

Quin emphasises that The Strategist, which costs about £250, should not be relied upon to do the detailed planning and estimation for any venture. "It's a kind of finger in the air - or like the scribble on the back of an envelope: the starting point of a planned operation. I wouldn't recommend anyone to use The Strategist other than as a generalised business model. Once you've reached the point of predicting the breakeven point then the plan should be put to a more sophisticated financial planning system for verification."

To produce this "finger in the air" software Ashton Tate worked on a standard model for business development, varied by 16 sub-models.

A product or venture can be put

## GROUND FLOOR SHOWROOM with Parking-in the mainstream of micro processing

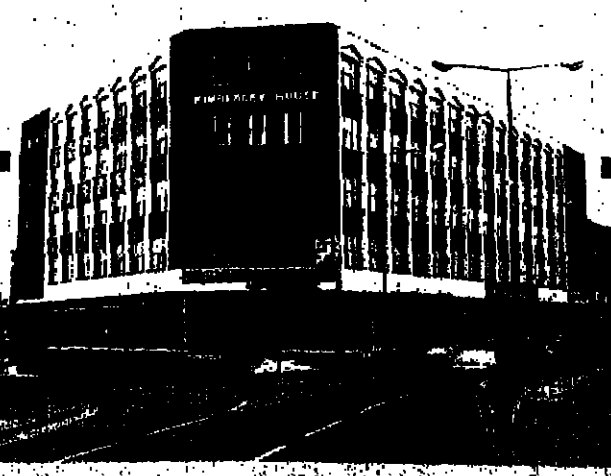
Standard Chartered Bank has vacated 8000 square feet of suitably opulent accommodation on the ground and first floors of Kimberley House, Vaughan Way in the centre of Leicester.

The Bank is moving to larger premises in a city where there are so many micro-processing firms that the local Chamber of Commerce has opened a special department to handle their business.

These centrally heated premises with ten underground car parking spaces are held on a 25 year lease which expires in March 2002. The rent is £8,100 p.a. and the next review is in 1987.

Leicester stands at the heart of the motorway network a hundred miles south of Manchester and a hundred miles north of London. Fifty-three High Speed trains link Leicester with the capital each day. For further details and an appointment to view contact:

Tarrant/Carr Commercial, 16 Market Street, Leicester. Telephone No: (0533) 653371 or (04555) 56361.



## CAD firm plans to buy from IBM

by Caroline Burgess

LEADING computer aided design manufacturer Computervision gave a clear signal last week of its plans to revamp its image by announcing that it will buy hardware and software from IBM.

The agreement, signed this month, forms part of Computervision's plan for expansion into new markets, particularly data management in engineering and manufacturing industries. Hardware will include IBM's 4300 series.

Computervision also aims to sell more CAD/CAM equipment to users wishing to link with IBM mainframes.

Computervision at present sells CAD/CAM systems based on its own minicomputers, which it will continue to do. September sees the launch of its first 32-bit minicomputer, the CDS-400.

James Berrett, Computervision's president, said: "We chose IBM for its unquestioned experience in information management projects."

Computervision's new strategy for the '80s will involve joint developments, equipment purchases and its own internal developments and its own internal developments, explained Berrett.

The first product using IBM equipment should be available within a year. Computervision would not say how much the agreement was worth.

Computervision has also agreed a joint development project with Sun Microsystems to produce a range of intelligent graphic workstations. Sun said that the deal would be worth \$40 million.

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## WORKPLACE

# Training council to tighten up on grant fiddles

THE Manpower Services Commission (MSC) is frustrated with the attempts of some computer training companies to abuse its scheme of grant aid towards courses.

As a result the coming year's programme, due to begin this month, will be much more tightly controlled, according to Gordon Ewan, director of Cosit, the Computer Services Industry Training Council.

Cosit is responsible for distributing MSC grants for computer training and for developing new grant aid programmes. Ewan says that plans for next year are not yet complete. The money available will be about the same, although it will be distributed very differently.

MSC support has been provided this year at the rate of up to £20 a day, a sum which companies sending staff on training courses can claim back. But, according to Ewan, some training companies have been abusing the scheme in their advertising by suggesting client companies could make a profit.

One firm inferred that £100 could be claimed for a course costing £80.

"Such things really get up the MSC's nose," says Ewan.

A more typical case of a small training company falling foul of the MSC is that of North London-based Ditec. The company is offering one-day, three-day and week-long courses on programming micros and running business applications software.

The basic cost of the courses is £95 a day, although the weekly one costs only £195. But Ditec's managing director Dhruv Patel claims that some of his courses are eligible for the £20 a day MSC grant.

The courses are fine enough and probably will be eligible for MSC grant, but, Ewan points out, somewhat to Ditec's inconvenience, the courses are still awaiting approval. In any case, the company is jumping the gun slightly since it has not yet been considered for next year's scheme, beginning this month.

Patel says that one of the conditions for grant approval next year will be that the training company belongs to Cosit. Ditec has duly joined, and Patel expects approval soon.

Enough of controversy. On the positive side Ditec is making a bold attempt to cut out jargon and

write simple training manuals to cover the course topics.

This is quite a feat since English is not the first language for most Ditec staff. There is one English person, along with a Thai, an Indian, someone from Japan, and Dhruv himself, who is a Ugandan.

Patel employs a consultant of impeccable credentials to check the manuals, Bob Tweedy, who was a member of the Alvey Committee set up to recommend a UK response to Japan's fifth generation initiative.

One of Ditec's single day courses covers the popular micro database development package dBase II from the US company Ashton Tate.

This package is bugged by a thick jargon riddled manual which Ditec has reduced about six-fold in size and translated into short, easily comprehensible English. The company's accounting course is similarly accompanied with a booklet introducing the businessman to the micro.

The company also writes software, mostly tailored packages using dBase II. Like some other small companies dealing with software, Ditec has launched a scheme to introduce people to the micro.



PATEL... Cutting out the jargon from the manuals.

Local businessmen, or anyone interested in learning the basics, can phone and make an appointment during two afternoons a week with the Islington office for £3.75 an hour.

Staff will teach a little Basic programming, or show the customer what can be done with software packages.

## Sorry if you were puzzled

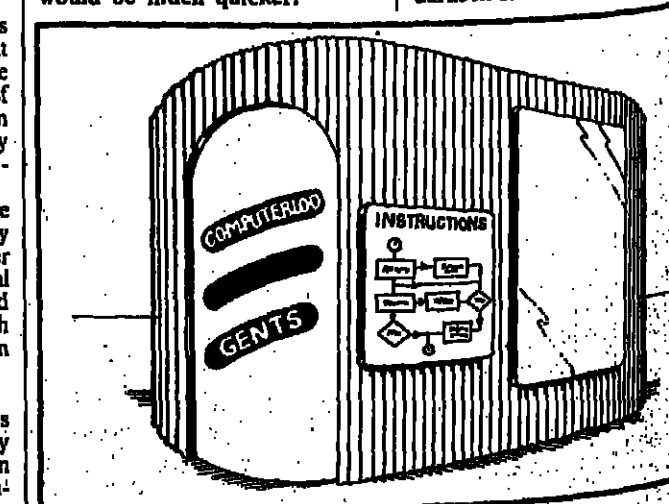
MY postbag has been bogged down with correspondence from readers who have spotted mistakes in solutions to two Puzzlers which appear at the foot of this page. Our most recent blunder caused a multitude to complain that the solution as published was impossible - as indeed it was. A printing error had added a line to the Japanese puzzle of the August 4 issue.

We also had a fat postbag pointing out that our solution for the June 23 Puzzler, although correct, was not the only one.

Two points arise, apart from our own fallibility. The first is, where do all our readers find the time not only to do the puzzles, but to write to us and complain when the answers are wrong?

Incidentally, it is surprising how many of the letters come from staff of big organisations such as IBM, ICL and British Telecom, where it seems there is more time available.

The second point is that many problem solvers are writing computer programs to accomplish their task, when a little human wit would be much quicker.



Workplace is compiled by Philip Hunter

## PUZZLER

THEORY has it that ten square tiles, having respective side dimensions of 3, 11, 12, 23, 24, 35, 38, 41, 44 and 45, can be placed together on a flat surface to form a perfect rectangle.

This week's problem is (a) to work out what the size of that rectangle must be; and (b) to determine how the squares will lie in relation to each other.

See page 47 for solutions.

## Pay data scrambled at time of writing

IBM mainframe users can protect confidential data from their inquisitive programmers with software written by a Peterborough consultancy. The software overwrites the company's payroll packages and scrambles data as it is written on to magnetic disc.

Passwords have been used for many years to stop all and sundry knowing what everyone else is up to, until now there has been no way to stop the programmers involved with a system from digging up confidential data by dumping it to file, according to Nick Cook, technical director of Peterborough Software.

"As far as we know this is done in the UK," says Cook. "It's something the industry has overlooked."

Dongles for small computers much talked about as a means of encrypting data to make it undecipherable. These are small pieces of hardware that sit between a micro and a disc or cassette to encrypt the information as it is written to disc and decipher it when it is read back into the computer.

Peterborough Software has achieved the same effect with code.

"In the IBM mainframe environment we are not in a position to put in hardware amendments. It has to be software."

In conventional data protection, Cook explains, an experienced programmer can write a small program to get a print of the data and glean the information by perusing the dump which will be in octal or hexadecimal code.

"With our files you end up with gobbledygook."

Cook admits that the company's cipher technique is not unbreakable. "But it would be a damned good person who breaks the code."

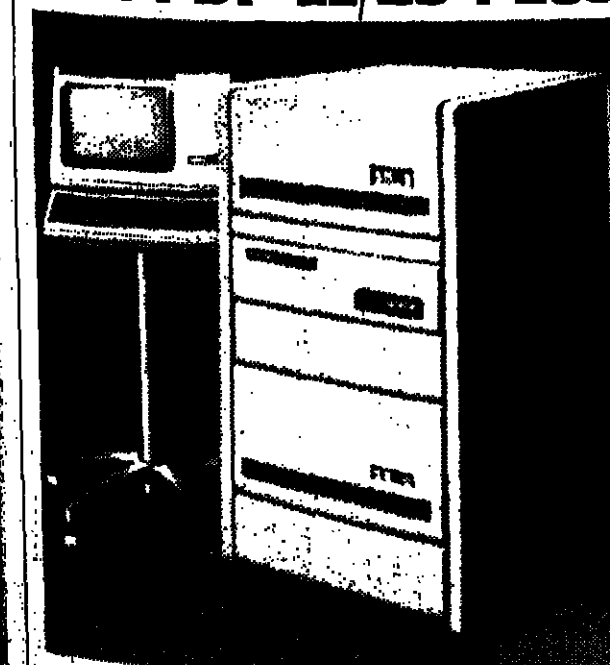
And if the code is broken, Cook continues, it can quickly be changed with the new version included in the next release of the software. The company is considering changing the code regularly.

The code software comes with the company's Unipay and Unipersonnel packages and will also be available with Unipersonnel. The cost of the packages depends on the number of employees to be catered for. Unipersonnel costs about £5,000 for about 750 employees.

Cook will naturally not tell us how his code works. But he says that it is not based on the well-known technique called the Data Encryption Standard published by the US National Bureau of Standards in 1977.

# MORE BYTES THAN LONDON ZOO!

## THE PDP-11/23 PLUS



GRRR!

Rapid Recall

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Women in a familiar promotional role: Will Wise Year change anything?

## Wise effort to bring women into computers

NEXT year will be a Wise Year for women in science and engineering.

A Wise (Women In Science and Engineering) campaign will be launched at schools and industry in September in an attempt to bring more women into high technology. At present only about a quarter of computer science graduates are women, and the ratio becomes still less favourable as you move up through the hierarchy of computer companies.

So far the campaign has only been outlined, and firm details will come after initial responses from letters to schools and industry.

There will be two thrusts: a local campaign aimed especially at schools and small firms in the area, and a national public awareness programme.

Wise is a joint venture funded by the Equal Opportunities Commission and the Engineering Council. The Commission is staging a conference in November to discuss the problems of poor female representation in high tech.

Meanwhile the Engineering Council is funding two smaller individual projects. It is giving £10,000 for a one-year research project to look at the reasons why girls at secondary schools are not taking up computer studies.

The other project is to develop

ment in some form on many computers.

A notable exception to this torpidity is the case of Ada, the real time language which emerged from the US defence community to take on Pascal, Coral 66 and others for live applications like process control.

Ansi has been quick off the mark and given Ada a standard before full working compilers have been available.

Cobol has suffered most from slow development of standards. So much that a member of both Ansi

and the international Codasyl body that decides how the language should develop and recommends changes to Ansi recently suggested that something should be done.

Jerry Garfunkel - brother of singer Art - suggested that standardisation be split into two phases. There would be a long term revision cycle every ten to 15 years, punctuated by development modules every two years.

And Ansi has made a move which indicates that this august and austere body realises it is not

much good having language standards lingering a computer generation behind the times.

It has set up a Study Group on Programming Languages with a first meeting scheduled for August 31. The idea is to try and standardise the standards. The group will look at how guidelines applicable to a specific language can be applied to all other languages.

It will also look at links between systems languages such as database, graphics and operating control with the high level languages such as Fortran and Cobol.



## PEOPLE



## Sponsoring refugee work in Sudan

FELTHAM-BASED GCS Engineering is helping to sponsor a South Wales schoolboy who flew out to the Sudan on Sunday to undertake a year's refugee work teaching local children in remote villages. As well as contributing towards his travel expenses, GCS has supplied him with a camera and a shortwave radio-cassette system which will be of use in teaching.

The 17-year-old schoolboy, David Hawkins from Cowbridge, South Glamorgan, has recently won a place at St Antony's College, Oxford University, where he will read psychology starting in 1984.

Until then his trip to the Sudan is being made

under the auspices of Project Trust, a charity set up in 1968 to enable young people to experience living and working overseas.

In looking for sponsors, Hawkins spotted a GCS Engineering advertisement which prompted him to write to the company.

GCS Engineering managing director, Bill Nickoll was impressed by Hawkins' positive ideas. "It is rare to find such good sense and determination in a 17-year-old today," he said.

Nickoll is seen presenting Hawkins with his camera, radio cassette and cheque.

Hawke Electronics announces the appointment of John Lythall, 35, as managing director. He takes over from company founder David Griffin, who is to pursue other business interests. Griffin's association with Hawke remains in a non-executive directorship capacity. Lythall has been the company's technical director for the past seven years.

Mohawk Data Sciences has appointed Mike Edwards manager of key accounts. He will be responsible for managing the existing customer base in Southern England. Previously a sales executive with Mohawk's Southern region sales force, he first joined the company in 1978 as a sales support executive.

Peter Ferrigno has been appointed customer services manager with Burroughs UK, after 16 years at IBM. He will be responsible for all of Burroughs UK systems services staff located in six regional centres around the country and handling the full range of Burroughs software.

Shaun O'Reilly has been appointed general manager of Rhone-Poulenc Systems, a Dunstable-based company specialising in the microfilm, drawing office and computer media market. O'Reilly, 38, joined the company in 1979 as administration manager before becoming finance and administration manager and then director of finance and administration.

John Kelly has joined Pragma as sales engineer with special responsibility for the company's range of Chromatics colour computers and displays. He was formerly with Dicol Electronics as a senior technical sales engineer.

System Industries, supplier of disc and storage systems for Digital Equipment and Data General minicomputers has set up a Benelux office and formed a wholly owned subsidiary in the Netherlands. It has appointed David Taylor as regional sales manager, Benelux. He was previously sales manager with Arystom and a systems analyst with Logica.

Rex Blagg (below) has been appointed sales and marketing director of DVW Microelectronics, the Coventry-based manufacturer of the Husky portable microcomputer. He has worked for Prime Computer since 1976, most recently as managing director of Prime Computer Services AG in Zurich.

Ex-ICL man John Gould (above) is to head a new software and systems company, Transaction Point. The Reading-based firm is supplying ICL computer users with software and consultancy in distributed computing. Gould, 37, was previously a senior manager in ICL's Reading offices where his 100 strong department was employed in the development and use of distributed computing technology.

Keith Harpham is now a director of Datasolve, the computing services subsidiary of Thorn EMI. He was previously general manager, commercial products.

Audiogenic, a software company has announced five promotions and appointments. Anne Foster is named as international sales manager and has been elevated to the Audiogenic board of managers. Henry Smithson has been appointed new product manager and is now responsible for evaluating the potential of all new software. He has also been promoted to the board of managers. Susan Allan joins the company as sales support co-ordinator. Richard McDonald joins as full-time company accountant, and David Middleton, previously with Commodore, has been promoted to product development manager after eight months with the company.

Joining Delta Data Systems as sales executive after two years with Tandy is Peter Jones. He was manager at Tandy's Queensway Computer Centre in Birmingham, selling micros. He also spent some time at the Walsall head office as a senior salesman.



Blan Computers, a recently formed company which will manufacture and distribute a new range of home computers, has named Michael Shirley (above) formerly director of marketing. Shirley was one of the sales management team that set up Braun UK, before moving to Clairol to launch an appliance division. He is also managing director of Rotel Domestic Appliances.

Christopher Loney has taken up the new post of manager, planning at STC Business Systems. Before joining STC, he spent five-and-a-half years with the national Economic Development Office, latterly as Secretary to the Distributive Trades Economic Development Committee.

The University of Newcastle-upon-Tyne announces the appointment of Dr P. Hitchcock to the Readership in Data Processing from August 1, and D. G. Harris, director of Tesco Stores (Holdings) is named as visiting professor in the computing laboratory for the academic year 1983-84.

Dublin based software and consultancy company, G. C. McKewen & Co. announces the appointment of Ray Crawford to the board as director of international marketing. Crawford comes from CACI Ireland where he was director of marketing for the software products division.



John Jackson (above) has been appointed chairman of Quorum Computer, a company which was formed when former management and staff of Q1 Europe bought the business. The new company, which employs 40 people, is engaged in the development, manufacture and marketing of a user microcomputer network office information applications markets throughout the UK and Western Europe. Jackson, formerly chairman of Q1 Europe, is director of Philips Electronics Associated Industries, Lab Group and Satellite Television.

Lynne Young has joined National Advanced Systems (Europe) Corp. as marketing services manager. She will be responsible for co-ordinating marketing services, organising conferences and seminars, and internal and external communications. Previously she was marketing manager for AVX, a copiers manufacturer.

William F. Asprey Jr. will join the staff of the Charles Babbage Institute this summer as assistant director. The Institute is devoted to encouraging the study of the history of information processing. Asprey was taught in the mathematics department of William College and in the history of science department of Harvard University. He has served as an editor for publications on the history of computing.



Peter G. Tagg (above) has been appointed managing director of Image Systems Ltd, of Bishops Cleeve, the UK subsidiary of Image Systems Inc., of California, a supplier of microfilm retrieval systems. Tagg, a qualified engineer, comes from a marketing background in the electronic component industry.

## [THE KEY \* TO SUCCESSFUL SOFTWARE SALES]

Earl's Court,  
London.  
June 5-7, 1984

software '84  
EXHIBITION AND CONFERENCE

Certainly the major software event of 1984 will be **Software '84**, to be held for the first time in Central London. **Software '84** will be totally dedicated to professional software sales and will be held from 5-7 June 1984 at Earl's Court in the centre of London, the Nation's biggest commercial market place.

Such a show could only come from a company that understands the computer market. Reed Exhibitions, the country's largest exhibition organisers, will be staging **Software '84** with all the skill the company has already brought to the highly successful Compec shows.

Computer Weekly and Software\* will be sponsoring both the exhibition and the prestigious conference, running at the same time, guaranteeing a high level of interest in both events.

Inevitably, top quality business visitors will be drawn to such a show, with DP professionals, dealers, OEM's and serious business and professional end-users all visiting the exhibition with nothing but software purchase at the forefront of their minds.

With that kind of captive audience you can't afford not to be a part of this important event. So turn the key to the booming software market and make **Software '84** the key to successful software sales. The first step is to fill in the coupon below:

\* In association with Systems International, Practical Computing, Micro Business & Computer Talk

Please send further information on:

**Software '84** Exhibition ☐

(Please tick as applicable & return to either)

The Exhibition Manager, **Software '84**, Reed Exhibitions, Surrey House, Throwley Way, Sutton, Surrey SM1 4QQ

or phone 01-643-8040 NOW!

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**software '84**  
EXHIBITION AND CONFERENCE



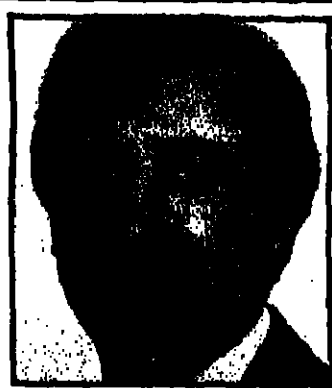
Peter Chapman (above) has joined Xionics from ICL as applications software manager. In this newly-created position, he will be concerned mainly with advanced software at the presentation layer of the ISO model and the development of software arising from the emerging document architecture standards. In his final post before Xionics, he co-ordinated ICL's interface design policy for the office systems division, and when he left was ICL's viewdata manager responsible for implementing viewdata on office systems and VME 2900.

Xylogics International has appointed Bruce J. Bergman president and chief executive officer. His experience includes engineering, marketing and general management assignments at General Dynamics, Honeywell and Control Data.

Chernikoff Telecommunications, manufacturer of Autex automatic telex message-switching systems, has opened a new Northern sales office at 20 Princes Drive, Flint, Clwyd, and has appointed Frank Carter as Northern sales executive to manage the office. He will be responsible for Autex sales throughout the Midlands and Northern England.

Toltec Computer has appointed John McCarthy as national sales executive. He will be responsible for nationwide sales of the Data Ring. McCarthy worked for two years with Racal-Milgo as a sales executive.

Dr Stan Jones has been appointed technical marketing director of HPA Micro Applications, a new subsidiary of Hughes Pushman Associates. He was previously projects director with Software Sciences Industrial Division, based in Daventry.



Ex-ICL man John Gould (above) is to head a new software and systems company, Transaction Point. The Reading-based firm is supplying ICL computer users with software and consultancy in distributed computing. Gould, 37, was previously a senior manager in ICL's Reading offices where his 100 strong department was employed in the development and use of distributed computing technology.

Keith Harpham is now a director of Datasolve, the computing services subsidiary of Thorn EMI. He was previously general manager, commercial products.

## CONFERENCES

If data dictionaries have failed to live up to expectations it is probably due to a lack of understanding of the cost/benefit profile, and poor acceptance by development staff resulting from unsystematic management of their implementation. How these problems can be overcome and the ground laid for increasing automation of the system development process, is considered by David Gradwell in his presentation of Pergamon Infotech's two-day tutorial, Data Dictionaries - Realising their Potential. The third running of the tutorial, already presented to over 150 delegates in London and Copenhagen, takes place in London on September 20-21. Fee is £360+VAT. Further information from Pergamon Infotech, Maidenhead (STD 0628) international +44 628) 939101.

SEPTEMBER 14, 21, 28, OCTOBER 5, 12, 19

Computer-aided Circuit Design is a short, advanced pick-up course organised by Coventry Lancaster Polytechnic. Course fee is £60. Details from Carolyn Hall, (0203) 24166.

SEPTEMBER 15, 16

Microcomputers in Banking is an international seminar to be held in Luxembourg. It is organised by Société des Poires Internationales de Luxembourg, Rue Alphonse, Welker, 2721 Luxembourg-Kirchberg, BP 110, L2011 Luxembourg.

Reducing Human Error in Computer-based Systems is a Frost and Sullivan seminar at the Park Lane Hotel, London. Price is £385.

SEPTEMBER 14, 15, 16

Office Automation and Integrated Information Processing Support Systems is a Frost and Sullivan seminar taking place at the Hilton Hotel, Amsterdam. Cost is £425. Information from Carolyn Budd, 01-486 0334.

the Computer Science and System Division of UK Atomic Energy Authority, Harwell, and delegates will be accommodated in the college of Magdalen, St Katherine's and Mansfield.

Keynote speakers from IBM's development laboratories will be headed by Jim Cannavino, manager, program development, data systems. A feature of the meeting will be a VIP Day to which the senior computer management of selected installations will be invited. Non-member installations may also be invited. More information on 0235 24141 x3230.

IWP's first event of its autumn programme is a workshop for existing and potential word processor users designed to show how productivity gains can be made through the direct interface of word processors to other input and output devices. It will be held on September 29 at the City Conference Centre, London. Cost to IWP members is £65, non-members £85

plus VAT, including lunch. More information on 01-242 8691.

A one-day technical seminar for senior design engineers will be hosted by Pronto Electronic Systems on September 26 at Imperial College, London, and will consist of a series of technical papers presented by Seeg Technology and Western Digital Corp. Cost of the day will be £25+VAT. More information on 01-554 6222.

The fourth annual computer-based training seminar and conference organised by the National Computing Centre will be held from October 11-13 at the Lanes West Hotel, London. "CBI 83" has been extended to three days and will cover introductory and applications and CBI 83. The seminar fee will be £127.77 (including VAT) per delegate per day. Further information from Kathy Owen on 0611-6332.

## DIARY

AUGUST 24-SEPTEMBER 21

Introduction to Database management using dBASE II, City Technology Centre, London, £45.00 including lunch. Details: 01-739 8856.

AUGUST 30-SEPTEMBER 2

The second International Conference on Database, organised by the British Computer Society and universities of Aberdeen and Cambridge, takes place at Churchill College, Cambridge. Details: Peter Hamersley, Middlesex Polytechnic, London N11 2NQ.

AUGUST 31-SEPTEMBER 1

Improving Programmer Productivity is a practical workshop for trainee programmers with basic language training and initial experience. Run by BIS Applied Systems, it is to be held at the Park Court Hotel, London, and costs £270. Details: Cherry Bignore, 01-261 9237.

SEPTEMBER 1

Computer Open Day Exhibition, Ladbroke Dragnora Hotel, Leeds. 10am-6pm.

Are You Leaving Your Career to Chance? P. Hequet, Electronic Recruitment Company, University Centre, Mill Lane, Cambridge. 0223 555555.

SEPTEMBER 5-8

IBM Cobol Review, a course organised by Altergo Education, takes place in London. Aimed at inexperienced Cobol programmers, it costs £450. Details: Altergo Education, 01-836 9303.

SEPTEMBER 6, 7

BIS Applied Systems is running the course, Team Management Leadership, for newly appointed project or team leaders. It will be held at the BIS Training Centre, London SE1. Cost is £285. Details: Cherry Bignore, 01-261 9237.

SEPTEMBER 7-9

Implementing and Operating Local Area Networks is a seminar organised by Frost and Sullivan. It takes place at the Mount Royal Hotel, London, and costs £425. Details: Carolyn Budd, 01-486 0334.

SEPTEMBER 14, 21, 28, OCTOBER 5, 12, 19

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البريد الإلكتروني





# Fraud is not the only computer crime fashion

Ken Wong singles out logic bombs, arson, sabotage, theft and vandalism as popular crimes

COMPUTER fraud is the glamour crime of the 80s.

The computer aids and abets villains to milk large sums of money from organisations by exploiting loopholes in accounting systems.

What other crimes are possible on computers? Are they serious enough to warrant management attention to take positive action on crime prevention, detection and contingency planning?

The 1983 edition of the BIS Computer Crime Casebook compiled by Ken Wong and Bill Farquhar reviews over 60 documented UK cases of arson and bombing of computer centres, sabotage of equipment, data, programs and service, malicious damage and vandalism of equipment, theft of portable equipment and components, theft of information, programs, tapes and discs, as well as illegal penetration of timesharing services.

Over 50% of the total reported cases occurred in the last two and a half years and a significant number incurred serious losses to the victim organisations.

The casebook is available for £20 from Judith Lewis, BIS Applied Systems, York House, 199 Westminster Bridge Road, London, SE1 7UT.

ARSON and bombing culprits ranged from a security guard, a works fireman, a caretaker and other disgruntled employees, or ex-employees and outside vandals to IRA terrorists. Of 12 cases reported, damage was incurred by fire, smoke, water or explosion. Individual losses ranged from £13,000 worth of equipment destroyed to £8 million of damage to buildings and contents, with an average loss of £1.2 million.

The popular times for setting fire to equipment and premises appeared to be the early hours of the morning with Saturdays and Sundays being the most favoured by arsonists. As a rule such were the times when the premises were unmanned and most vulnerable to attack. The fires and explosions were generally started in areas outside the computer room.

One publishing company suffered an arson attack on its VDU room, resulting in damages to equipment, files and work in progress in excess of £700,000. Two years later another fire was started in identical circumstances in exactly the same location, and the company incurred a similar amount of damage.

In the cases of the security guard and the caretaker, both had fire

access to all areas on the premises and both were trying to prove to others their determination to protect company property in times of crisis for want of a better cause.

In fact the guard genuinely felt that his brave attempts to fight the fire would probably be rewarded with an honour from the Queen. The works fireman was practising his fire fighting skills by setting a waste bin alight. Unfortunately, on all three occasions the fire got

**One publishing company suffered an arson attack on its VDU room, resulting in damage in excess of £700,000**



out of hand and heavy losses were incurred by the employers.

These and other cases have demonstrated the need for vigilance in access control and security patrolling at night, together with proper preplanning for disaster recovery in order to speed up resumption to normal operation and to mitigate business interruption losses which are likely to escalate if processing disruptions become extended.

Then there is the problem of logic bombs. Five cases of logic bombs emerged over the last few years, being planted by programmers, a credit controller and software vendors. Most logic bombs tend to work on the basis of implanting a time fuse in the coding.

Continuous working of the software necessitates the date of de-

letion to be regularly moved forward to another future date; otherwise the fuse will set off the illegal coding planted on the due date to overwrite the application software and data, causing chaos to the installation.

In fact logic time bombs are frequently adopted by software vendors in their application packages leased out to client companies as a means to safeguard their software investments.

At the end of the lease, if the client reneged from payment or refused to renew the leasing, the software would be programmed to come to a halt on the due date, or self-destruct with possible corruption of other related program and data files.

In the case of the contract programmer who was asked to develop a payroll program with the promise of a permanent position on completion, the company withdrew their earlier promise and asked the contractor to leave when the program was proved to work.

A month later the program suddenly stopped working and emergency manual procedures had to be applied to pay the employees. Upon spending many hours poring over the coding, they found the programmer had inserted some illegal code in the program to ensure that the payroll would not be processed unless his name was first located.

Covert sabotage raised its head 12 times, on computer equipment, data, application programs and software as well as the service network.

The sabotage on equipment was carried out by operations staff in each case, either because the culprit was bored and frustrated, or in order to earn overtime payment for running jobs on a remote standby machine.

In the latter case the total overtime earning came to £687 but the total cost of machine failures to the company was estimated to be £500,000.

He simply opened the computer's back panel and used a screwdriver to make light scratches on printed circuit boards to cause short circuiting and other malfunctions. The most pathetic case was one of causing system failures so that the shift leader on the night shift could go home early.

Apparently the company was operating a go-home-if-it-breaks rule for the night shift. In most of these cases the victim companies expended vast efforts and resources to determine the cause of failures while bearing the burden of re-runs and processing delays as well as the resulting disruption to business in the meantime.

Only by a long process of elimination, following exhaustive testing of hardware and software to check for possible faulty components and coding, and diligent scrutiny of shift rota, were the likely culprits pinpointed and the crime proven with the subsequent installation of surveillance equipment in secret.

The wisdom of single manning for night shifts could well turn out to be false economy, when risks of sabotage are likely to arise from culprits on unsupervised duties which could result in dire consequences.

There were two cases of tape librarians wreaking vengeance on their employers, by damaging valuable tape files through either running a biro on the initial 23 feet of tape, or snipping off a similar length from the tape and concealing it in the computer room floor void.

On both occasions the crime was committed during the period of the termination of employment. The need for swift action in termination procedures for disgruntled employees cannot be overstated. This applies especially to those holding sensitive positions.

Ideally, the employee should be escorted out of the premises upon given notification of termination and paid in lieu of the period of

notice. If formal grievance procedures applied and must be followed, then the suspected culprit should not be asked to handle any further sensitive tasks and immediately denied access to terminals, files and computer equipment. Security codes and keys should also be changed.

There was one crime of passion by a programmer who attempted an ingenious approach to date his ex-employer's female operator by corrupting her software in order that he would be consulted to fix the fault. The story had a sad ending. The lady in question had chosen to go out instead with the system engineer who was called in to diagnose the computer failures.



The culprit was not prosecuted but was asked to give an undertaking not to cause further trouble to the company. He succeeded in connecting to the ex-employer's computer via a dial-up terminal to corrupt the programs because the system passwords were never changed. Such practice would be inviting trouble from both disgruntled employees and ex-employees.

Straightforward acts of vandalism and of operators wreaking

havoc to computer equipment and magnetic tapes were reported five times. Such attacks included hitting equipment with an axe bar, damaging a disc drive and pouring orange squash on the first disc, resulting in irreparable damage to the storage media, as well as kicking and smashing VDU equipment with a hammer.

All the cases of vandalism happened at night while the installations were unmanned and criminal damage resulted from computer break-ins. These cases highlight the need for the installation of intruder alarms to protect computer premises as well as locating computer rooms in the hearts of buildings to keep equipment away from outside prying eyes.

The two cases involving operations staff included one of a mentally deranged operator attacking a disc drive with a hammer and another of rowdy behaviour in the computer room after a drinking session, with the culprit standing on an important field tape and causing damage to the loader.

The second case has served to emphasise the need to enforce stringent access control procedures in computer areas. The institution's poor housekeeping was also partly to blame as field tapes should never be left lying on the floor.

The last few years have seen a dramatic increase in equipment burglaries, including one armed robbery for a large stock of microcomputers. Seven out of the 13 cases reported occurred in the last 12 months.

With every effort of semiconductor vendors to miniaturise electronic circuitry, computer equipment has shrunk in size and weight over the years and the increased portability has contributed to the recent trend of computer theft, as has the proliferation of business micros in unprotected office areas.

In some cases, the thieves appeared to be equipped with a shopping list for the crime and only took away the items "to order". In one or two cases, where the victim was a software house, it was suspected that the real criminal intent was to obtain the source code of some highly successful software packages developed in-house.

## Fraud is not the only felony now in fashion . . .

Continued from page 16

appeared to be equipped with a shopping list for the crime and only took away the items "to order". In one or two cases, where the victim was a software house, it was suspected that the real criminal intent was to obtain the source code of some highly successful software packages developed in-house.

The equipment theft was used merely as a camouflage. The case of the armed robbery was for 3,000 Sinclair Spectrums and the evidence strongly suggested that the criminals had obtained inside information and possible collusion from employees.

There was one case reported of a cheeky thief who walked into a university department and enquired of the students which one of the microcomputers kept there had the most storage. On being pointed out the right equipment, he placed some manuals on top, unplugged the computer and walked off with it in broad daylight, completely unchallenged by anyone around at the time.

The same crime was then repeated in another part of the country. Again this case has demonstrated the need for improved access control and increased security awareness of computer users to guard against this type of bravado escapade.

Another case of break-in saw the thieves locating the access control magnetic card left in a desk in an office and used it to gain access to other parts of the premises in order to remove computer and office equipment. Again the need for safe custody of access control cards and keys should be strongly impressed on all card and key holders.

Of nine cases reported involving the theft of programs, printouts with customer details and computer tapes and discs, more than half were due to victim companies failing to appreciate the risks of ex-employees removing such assets on leaving their employment.

The information removed was then offered for sale to the employers' business rivals. The most widely reported theft case was that of the ransom demand of £275,000 for the safe return of 540 tapes and 48 disc packs taken from a Dutch installation and its backup storage location.

The attempt was foiled by detectives seconds after the briefcase allegedly containing the money was snatched from a company executive in a street chase in London, before the culprits had time to open the case to examine its contents. If they had, they would have been very disappointed.

Apparently, the company had heeded the advice of Scotland Yard and stuffed the briefcase with the equivalent in weight of Playboy magazines in place of the ransom money.

Many organisations using word processing equipment do not appear to keep back-up copies of tapes or floppy discs on or off-site. Loss of the prime copies of files through fire damage or theft, or sabotage by disgruntled employees could cause serious havoc to the users concerned.

Recently some programs were allegedly stolen from the Police National Computer Centre and the case is still being investigated. One bank employee was bribed with £5,000 to steal the bank's access code for its computer systems. The implication in both cases smacks of serious criminal intent and points to the need for safeguarding any sensitive information which could be highly coveted by the criminal world.

Several cases of system penetration were reported on groups of school boys and university students using dial-up terminals to get into a commercial timesharing bureau and some university computers.

Passwords were illegally obtained from users with the object of acquiring free computer time. In one case the polytechnic lecturer actually instructed his students to break into the operating system to get into one of his files, called MARKS, in order to pass the examination.

Of the various types of computer crime outlined, how many of these can happen in your own organisation? It is easy to read about horror stories and games of folly happening to others. It is no laughing matter when it occurs on our own premises. Many of the crimes can be prevented by prudent management action and improving the security awareness of computer users.

Capital expenditure on access control equipment and fire protection need not be high to provide an adequate level of protection for company assets. Good security procedures and personnel management would help to alleviate heavy losses by early detection and risk prevention. Unless we take positive action the problem will simply not go away by itself.



One arson was begun by a works fireman who wanted to practise his fire-fighting skills.

## The Key Specialist Event in the Computer Year

Sponsored jointly by the Peripherals Suppliers Association and 'Systems International', Peripherals '84 has justifiably been named the *only* specialist show for computer professionals.

Through a massive publicity campaign using all the key systems development publications, Peripherals '84 will attract a record number of visitors from purchasing/specifier sectors of this continually expanding market. Attendance in 1983 was up 25 per cent on 1982. And 1984 is all set to be the biggest and most successful to date.

This is the buyer/specifier confrontation of the year. Don't miss it.

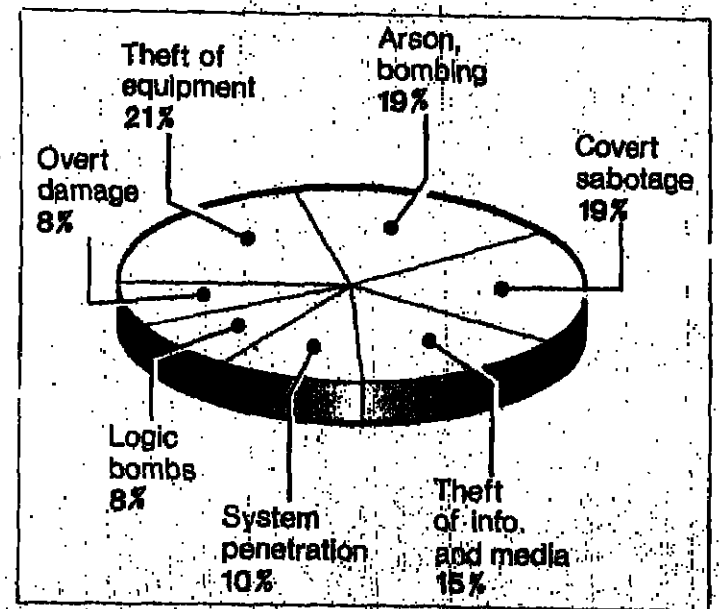
### How to Book Your Stand

This is the key specialist event in the Computer Year - ACT NOW - for further information telephone Ian Hardman, Sales Manager on 01-661-3022.

PSA members are eligible for a preferential stand rate. If you are not already a member and would like to know more about the association's aims and objectives phone Mr Michael Perry on 0908 668118. Provided you become a member before the opening of Peripherals '84 you can claim the special members rate.

For more information return this coupon to Ian Hardman, Peripherals '84, Room L216, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS.

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Company \_\_\_\_\_  
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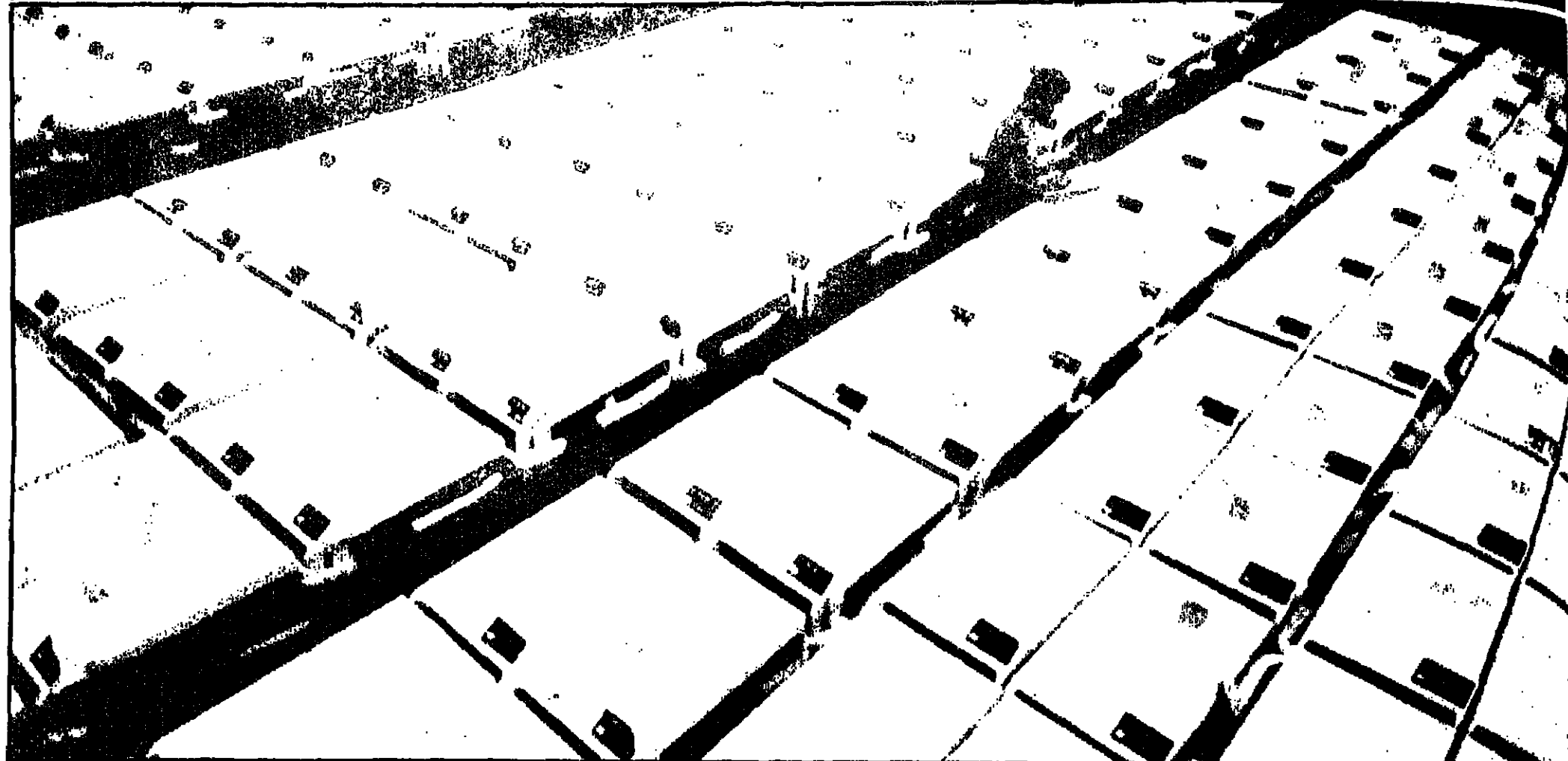


Distribution of computer crime cases.



WONG... Compiled over 60 cases of crimes.





No doubt IBM's disc manufacturing facilities are geared up to be ready to take advantage of the growth in personal databases.

# The relational database is coming of age — at last

The data processing manager's dream of simple, effective systems is approaching reality, as Phil Manchester reports

DATABASE management systems have long been touted as the answer to the data processing manager's prayer. All of a company's data, entered only once and accessible to all who have the authority to access.

This has been the dream. Unfortunately, the reality has often fallen short of the marketing jargon and database implementations have consistently failed to live up to what was expected of them.

A major obstacle has been the growing complexity of database structures, coupled with the need to expose end-users more and more to the data.

The relational database model is an attempt to get around both of these problems by first simplifying the structure and secondly making it appeal to end-users.

The simple, tabular structure of relational database models is certainly easy enough to grasp. Like the central idea in popular spreadsheet programs (Visicalc, etc), the view of the data seen by the end-user is of a series of tables containing rows and columns.

In old fashioned filing systems,

DBMS authors wish.

This leads to considerable performance problems, because, theoretically, every piece of data requires a complete search of the whole database for it to be accessed.

Despite the extraordinary advances that have been made in hardware design and performance, machines are still not that good. The total relational database, as originally envisaged by its inventor, Edgar Codd, has yet to be achieved.

This has not stopped IBM and others implementing parts of the idea and the justification for limited implementation of the concept is nowhere better put than in IBM's recent announcement of a relational facility for its large MVS users.

It goes like this: "For operational systems, highly related data structures are needed. The hierarchical model of data is appropriate, as the relationships required can be built into this model in advance."

"IMS/VS and DOS/VS DL/I are IBM's database products for

year by the release of a similar facility for customers using the fashionable VM operating system (or environment).

The announcement last month completed the hat trick, giving both MVS/370 customers and the few MVS/XA customers their own version of the relational model.

Together with the database management software (DB2) the announcement also reveals two other products, one of which continues the trend started with SQL/DS (the DOS/VS relational model) and another which reveals a change of emphasis by IBM.

In the former case, the relational database is still to be built up using an extraction process.

One of the major criticisms to come from independent database vendors when SQL was launched was that the relational database was only achieved by extracting information from existing DL/I databases.

Once the extraction process had taken place, any further updates to the original database would, therefore, not be reflected in the relational version.

The simple technical reason for this is that with medium to large databases, the overhead would be far too great. As mentioned earlier, the simple structure of the relational database is too time-consuming to maintain.

So if the DL/I database is thought of as a movie, then the extracted relational database is a still photograph.

As IBM argues, the applications of the relational model (such as Decision Support Systems) require different data characteristics to those demanded of operational databases.

Whereas operational databases are relatively stable structurally, allowing the structures to be predefined and geared to getting performance out of them, decision support databases need a dynamic structure that can be adapted to suit their current purpose.

This was followed earlier this

the name of Query Management Facility (QMF) and is described by IBM as "an interactive program, which has been specifically designed for use by business professionals with data stored in DB2 (the MVS relational database) and SQL/DS (the DOS/VS).

As IBM points out, QMF is "more than just a query/report writing tool". Not only does it allow supposed business professionals (presumably those who are engaged in real business as opposed to playing with computers) to "manage" their query processing and database manipulation, it also allows them to juggle the data around.

QMF apparently contains facilities to update the relational model, using what is called "data creation" and "data modification". The latter is "to permit the effects of 'what if' type questions to be answered easily".

The implication is that business professionals will have the power to build and alter their own databases.

As it is safely remote from the main corporate database, there are no problems of security of integrity within the personalised database.

It effectively becomes the responsibility of the person using it. In fact this is not a new concept. IBM database people have been talking for some time about "owning" data within databases and providing multiple user views of the same data.

With QMF and the simple relational model, it appears that this idea has come of age.

"These facilities provide an excellent decision support aid. By working on a separate copy of the data, information can be changed, allowing the effects of these changes to be evaluated," says IBM.

This sentence, more than any other in IBM's announcement literature, sums up IBM's current attitude to database technology.

What's more, it lifts from its

corporate shoulders a burden that it has carried since it became evident that IMS would not do what was intended, ie create a database for all seasons.

As part of the general trend towards giving end-users in customer companies more of a say in how data processing power is used, it reaffirms IBM's position as the fountainhead of knowledge.

In effect, you can't have one without the other. If your company executives want to play with

seniority going to those having the biggest databases.

No doubt, IBM's disc manufacturing facilities are geared up ready to take advantage of the growth in "personal" databases.

The only disincentive, certainly for the foreseeable future, is the price of the new products. To buy the three products outright it will cost a cool £20,000, with the monthly rental standing at about the cost of an IBM-PC with a few frills (£3,400).

**It may transpire that the size of an executive's database will act as a sort of status symbol, with seniority going to those having the biggest databases**

the wondrous relational database, then the data processing department has to set it up, using the heavily DP-based IMS system (which in turn is guaranteed in perpetuity).

Most other approaches to relational database technology rely on only one database, managed in such a way that the diverse user views can be maintained without creating a separate copy.

Presumably, such systems would have to go through some similar process of abstraction to provide the kind of facilities that IBM is touting with QMF, though ways of avoiding this can be imagined.

Of course, in providing "business professionals" with the facility of "owning" their own databases and juggling around with them as much as they like, IBM also stands to make a killing in selling disc storage.

It is difficult to see a situation where these hypothetical business professionals will be content to have only tiny databases with a limited amount of information. They will probably want the lot.

It may even transpire that the size of an executive's database will act as a sort of status symbol, with

Once the ball starts rolling, however, this price could drop.

Although the current pricing will not put off the large IBM customers, it is not going to appeal to the small 4300 user. So, assuming that IBM will continue to "meet users' needs", a cheaper version for DOS/VS users would seem likely.

In trading on the current rage for relational database — a trend that IBM unwittingly started by allowing one of its researchers to publish an obscure academic paper in 1970 — IBM has managed successfully to solve a whole host of problems that have dogged its database developments for years.

It has guaranteed the future of DL/I and IMS — two out-of-date and tired products; it has opened up the world of relational database to customers' end-users — particularly where it has found yet another means of shifting from the form of the increased data capacities that will inevitably be needed to meet the demand for personal databases.

This is a master stroke that customers will doubtless love. Phil Manchester is a freelance journalist.

## MAGISTRATES' ROTAS

# How to put the right magistrates in their places

The problems of sorting out complex magistrates' rotas can be easily solved, writes Dr Steve Allen

ANYONE faced with the problem of preparing a rota, whether for school timetabling or for manning oil rigs, will surely recognise the time-consuming nature of the exercise. Many, many conditions have normally to be taken into account, which leads to the generation of a seemingly unending set of alternative rotas.

There is usually insufficient time to examine all possibilities and out of the set considered it is not an easy task to select the most preferable.

However, powerful computer methods have been developed to assist in solving such problems. The preparation of magistrates' rotas provides a clear illustration of this.

A Magistrates' Court may comprise many court rooms, each with

the development of a computer approach. The system created — known as Magsit — was soon being used by a number of courts, simplifying and easing the rota preparation process.

The collection of relevant information from the justices is quite straightforward, using standard forms issued from Scicon via the clerk. The justices indicate on the forms the dates on which they are unavailable.

The clerk adds key details, including each magistrate's eligibility to sit at the various types of court. The forms are then sent to Scicon at Milton Keynes to be processed by Magsit.

Magsit caters for mixed benches, chairmen for the different types of court, sittings where a certain magistrate must attend, magistrates who cannot sit together and much more. The system then aims to ensure even spacing for each justice between court attendances and avoids putting any pair of magistrates together too often.

As far as possible, each justice is given a balanced spread of sittings at the various types of court, and the overall number of sittings for each magistrate is comparable.

A range of rota tables is provided, giving details of dates of sittings and the types of courts. There is a complete court calendar, in chronological order. Calendars for each separate type of court are also available.

Of particular value to the clerk is the set of dates of attendances for each magistrate, showing the names of his colleagues at each sitting. These are often sent out directly by the clerk, removing the need for costly work at the printers.

Special facilities can be incorporated for courts to meet their specific requirements. For the larger courts, with perhaps 20 sittings per day, a revised format for the input documents has been introduced. This enables the clerk to collect data for morning and afternoon sessions. In return, rota tables can be produced highlighting these sessions.

While court sessions generally occupy a morning or afternoon, there are occasional sittings which take a whole day. Recent enhance-

ments to Magsit have included the ability to cater for these all-day courts.

There are occasional sittings which take a whole day. Recent enhancements to Magsit have included the ability to cater for these all-day courts.

A continuing development programme has ensured that the system continues to meet the varying demands of its users.

Some anecdotal criticism occasionally arises. The deputy chairman of one English magistrates' court complained to his clerk that he had been selected for a Bank Holiday attendance — it transpired that the date in question was an Irish Bank Holiday.



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## PRODUCTS

## Choice of pitch on Bowe guillotine

THE Bowe Company of Augsburg, West Germany, has announced another guillotine, the Bowe 310, in its range of forms handling equipment for cutting continuous computer stationery. The Model 310 will be marketed in the UK by Alara.

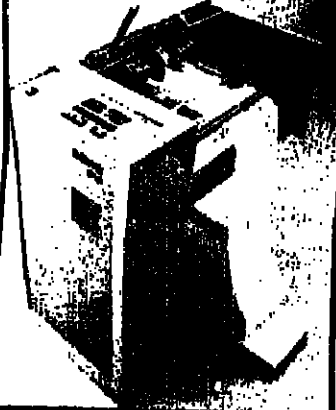
The Bowe 310 is a high-performance model at the top end of the range of Bowe guillotines. It can separate up to 25,000 4in forms an hour. Yet despite this performance, improved sound-proofing has reduced the noise emission level to around 70 decibels.

A major feature of the 310 is the ability to switch over from 1/6in to 1/8in feeding on the guillotine. This is achieved by a simple switch. Until now, users had to specify the form feed as 1/6 or 1/8in when buying a machine.

The 310 is available with a range of Bowe accessories such as conveyor stacker, dropping stacker, optical mark recognition margin trim bursters, paper loop control and double blade.

Price of the Bowe 310 from Alara is from £8,915.

Alara (CW), Iwergh Avenue, North Circular Road, London NW10 7UJ. Tel.: 01-965 9311.



The Bowe 310 guillotine.

## Half-height Winchester

THE Microcomputer Division of Sitron Electronics has launched the Model CM4213 half-height 5 1/4in Winchester disc drive of 13.34 Mbytes from Computer Memories Inc. It is the same size as the half-height floppy disc drive, and said to be of particular benefit to OEMs and systems integrators needing high capacity storage.

The high capacity-to-space ratio makes it suitable for use with desktop and portable computers.

The half-height drive incorporates the technology of Computer Memories CM6000 series of 40, 26 and 13 Mbyte 5 1/4in drives, offering the half-height 13 Mbyte drive and an average access time of 75msec. The drive also features a low 15.5 watt power consumption.

Sitron Electronics (CW), 14 Arkwright Road, Reading, Berks. Tel.: (0734) 875464.



The FIMA 1000 continuous stationery guillotine.

## For the trim office

FIMA 1000, a microprocessor-controlled desk-top continuous stationery guillotine for small to medium-volume computer users has been launched by Bell and Howell. Due to its quiet operation, the FIMA 1000 is said to be suited for use in an office environment or word processing applications.

The electronic controls offer a range of operating modes from straightforward edge trimming and cutting to sophisticated programmed operations where the continuous stationery is slit in half - with one half cut into separate documents and stacked, while the

other half is fan-folded, still in continuous form.

Other operating programmes include edge trimming with single and double alternate cut.

Features of the £3,300 guillotine include a buffer memory which stores the last program setting after power disconnection and a safety plexiglass cover to prevent access to moving parts while the FIMA 1000 is in operation.

Bell and Howell Business Equipment Division (CW), 33/35 Woodthorpe Road, Ashford, Middlesex TW15 2XJ. Tel.: (07842) 51234.

## Monitoring and alarm system

A LOW-COST microprocessor-controlled monitoring and alarm system providing surveillance and control for mainframe and peripherals has been launched by Vikingshaw Products. Offered at a fraction of the cost of conventional units, the CMS is easy to install, update or modify, says Vikingshaw.

The CMS will monitor and display a wide range of faults and conditions ranging from defective computer power supply, including voltage and frequency, to chiller malfunction, air conditioning variations, lighting and fire alarms. It can also be used in conjunction with a card lock system for security.

A remote panel permits the operator to cancel and accept alarms, and allows interrogation and fault analysis.

Using condition monitoring techniques, the system ensures that all plant and equipment is operating within specified parameters. In many cases it can be programmed to control automatically units such as boilers, fans and heaters to keep them within pre-set limits.

For areas such as computer rooms, which can be unmanned for long periods, the system operates an automatic dialling system. In the event of a breakdown, or the plant exhibiting unusual operating characteristics, the CMS will dial any specified



The monitoring and alarm system from Vikingshaw.

number to arouse key personnel. Based on the latest microprocessor chip, the unit permits continuous sampling of 512 points as standard, with full alarm and display facilities. Extra circuit boards increase the unit's capacity in multiples of 512.

Vikingshaw Products (CW), Osborne House, 12 Mount Ephraim Road, Tunbridge Wells, Kent TN11 1BB.

## Desk-top micro doubles as development support system

A MULTI-PURPOSE desk-top microcomputer that carries its own "toolbox" for software development has been announced by Motorola. It doubles as a development support system and an advanced dedicated microcomputer for OEM applications.

The system utilises the latest 16/32-bit microprocessor, the MC68010. Known as the VME/10 Microcomputer System, it is intended for systems OEMs who require a complete development system for all Motorola 16-bit and 8-bit MPU/MCU chip sets; for system integrators, to serve as a front-end microcomputer associated with larger external equipment for example in factory automation systems or large complex medical diagnostic instruments; and for OEMs who wish to buy complete microcomputer "engines" and add customised I/O and specially-developed application software to convert these into "turnkey" systems for dedicated applications.

The VME/10 desk-top micro provides a complete range of 8-bit and 16-bit software, hardware and instrumentation development support; carries sufficient memory to allow multitasking and multi-programming; and provides built-in multi-mode graphics hardware and offers a 15in video display as standard features (optional on many competitive systems).

The basic system consists of three interconnected physical elements: the system control unit, the keyboard, and the 15-inch video display unit.

The system control unit is the basic source of the flexibility and expansion capabilities of the system. It contains a system control module with VMEbus and I/O channel interface circuits, 5 or 15 Mbyte fully-formatted Winchester disc drive (6.4 or 19.1 Mbyte unformatted) plus a 655K Kbyte fully-formatted floppy disc drive (1 Mbyte unformatted) and a choice of two card cages permitting system expansion with up to five VME modules and four additional I/O modules.

The system control module, with its MC68010 microprocessor and an MC68451 memory management unit, provides sufficient processing power and memory to permit several development tasks to proceed simultaneously - editing, program development, system debugging - with full protection for each task, says Motorola. A total of 484 Kbytes on-board dynamic RAM, with multi-ported access from the local bus, the VMEbus, and graphics controller, permits expansion to a high-performance multiprocessor system by adding additional modules from the Motorola VME module line of board-level products.

The VMEbus and I/O channel interfaces provide the VME/10 micro with the configuration flexibility to make it useful in a wide spectrum of end applications.

All will be available for shipment in October. Chairman Gabriel A. Reiss said: "The new products will be completely compatible with our existing systems while offering attractive price performance for a multitude of demanding applications. We don't want customers to invest time and money in our products without knowing whether they will still be useful in a few years. With our products line, both their software and hardware investments will be protected."

The Classic II/15 is the smallest member of the Modcomp Classic II family and one of the most technologically advanced. The system is designed to provide the fastest response time of any minicomputer on the market today, and has both remote operation and diagnostic capability. The computer is expected to be used for data communications, scientific and industrial applications, plant management, and job automation functions. It is priced from \$8,500.

Modcomp V is designed for use both as a standalone process system or as a satellite unit. Modcomp (CW), Eskdale Road, Wokingham, Berkshire. Tel.: (0734) 698888.

Motorola (CW), 88 Tanners Drive, Milton Keynes MK14 5BP. Tel.: (0908) 614614.

Independent Computer Engineering (CW), Littleton House, Littleton Road, Ashford, Middlesex TW15 1UQ. Tel.: (07842) 47271.

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The Modcomp V from Modcomp.

## Modcomp's mini in the micro price range

MODCOMP has announced for new high-performance products. The single board Classic II/15, a powerful minicomputer system available in the microcomputer price range; Modcomp V, an intelligent computer designed to control industrial processes; Modcomp II, a data acquisition and control subsystem; and the 1485-X disc subsystems, a line of low-cost disc devices.

All will be available for shipment in October. Chairman Gabriel A. Reiss said: "The new products will be completely compatible with our existing systems while offering attractive price performance for a multitude of demanding applications. We don't want customers to invest time and money in our products without knowing whether they will still be useful in a few years. With our products line, both their software and hardware investments will be protected."

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Nottingham &amp; London

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Cambridge Data Limited (CDL) is a leading software house specialising in the supply of turnkey systems for the clothing and allied industries.

Their product range incorporates a wide variety of commercial applications e.g. Factory Production Control, Accounts, Stock Control and Order Processing, for CPM based multi-user micro computer systems.

To continue their policy of expansion CDL wishes to recruit additional Programmers for Nottingham and Central London.

You will have a minimum of eighteen months programming experience in BASIC and a knowledge of microcomputer systems.

Working for this small but successful company, you will be able to demonstrate initiative and good presentation to take responsibility of projects at customer installations throughout the areas. For further information and an early interview contact Knight on 01-491 4706 quoting ref YY140.



## Do you have experience in one of the following?

- \* Computer Staff Recruitment
- \* Data Processing Sales
- \* Recruitment Advertising Sales
- \* D.P. experience with good communication skills

If you have and are looking to advance your career with a leading computer staff services company, then KNIGHT COMPUTER SERVICES will present the right opportunity as a Consultant in our CONTRACT and PERMANENT Programming and Systems businesses.

The salary and commission structure is designed to be extremely generous for hard working consultants.

Phone Neil Williams now on 01-491 4706 for an initial discussion or send your CV to Knight Computer Services Limited, 14 Old Park Lane, London W1Y 4NL.

## Make a name for yourself with HUNTERSKIL South

We are looking for additional people who have energy and initiative to expand the CONTRACT Programming/Operating business. The rewards are high and an initial basic salary and guarantee will be offered to the right candidates. The potential for professional growth is high. Your application will be treated in the strictest confidence. Please contact Nick Gill on 0828-75551 or send your CV to HUNTERSKIL South, Chatsworth House, The Broadway, Maidenhead, Berks SL6 1LY.



## BASIC + Programmer

Cambridge

£7,500-£13,000 aae

Our client is a well established firm of Chartered Accountants with offices located worldwide and throughout the UK.

Their Data Processing centres operate a wide range of System and micro computer systems, supporting both internal commercial and customer applications.

The Programmer will have a minimum of 18 months BASIC + experience gained in a commercial or financial environment.

Initially, the Programmer will be responsible for writing programs from specifications but will move into an Analysis role after a qualifying period. In addition, he or she could be expected to travel to locations throughout the UK to assist users on the utilisation of the computer systems.

The salary is negotiable depending on experience and qualifications. For further details ring Knight on 01-491 4706 quoting ref YY160.



Confidential Reply

## Up to 111 megabytes with new disc family

A NEW high-performance family of 5 1/4in Winchester disc drives, announced by Priam (Europe), features a 32ms access time and storage capacities ranging from 55 to 111 Mbytes.

Designated the 500 Series, the Priam discs are said to be suited for application in high-powered workstations and space-limited multi-user systems.

The 502 model has four discs storing 55 Mbytes; and the 504 has six discs storing 86 Mbytes. Both

are compatible with the ST412/506 interface. The 503 and 505 models have higher recording densities to get 71 and 111 Mbytes of unformatted storage capacity, on four and six discs respectively. These two drives feature on-board data separation, and will be available with Priam and Ansi interfaces.

The 502 and 504 specify a 0.525 Mbyte/sec transfer rate and 9.212 bits/inch recording density; similar specifications for the 503 and 505 are 0.806 Mbyte/sec and 11,886

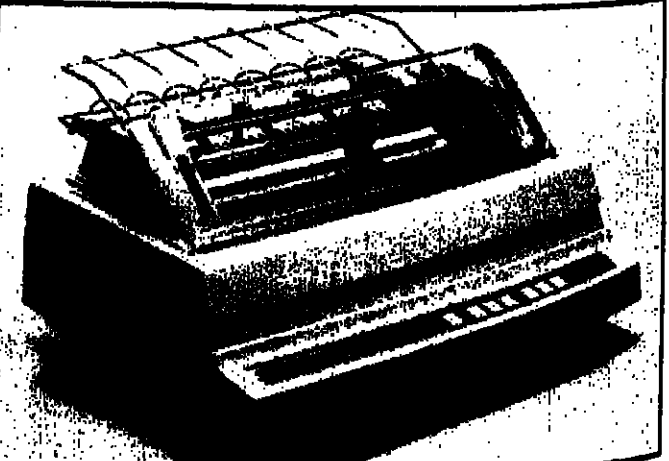
bits/inch respectively.

"Several companies and industry groups recently proposed an Enhanced Small Disc Interface (ESDI) standard, but many major manufacturers feel that too many ambiguities exist to accept it. It is improved and contains so many inefficiencies that several companies originally proposing ESDI are having second thoughts," was part of a statement by William J. Schroeder, president of Priam, and James S. Torsion, president

of Bebec.

"The need for an interface standard that can be supported by the entire industry is abundantly clear. The Ansi standard we are supporting has several advantages over the proposed ESDI standard."

"They announced that their respective companies are proceeding with the development of several new compatible products incorporating the Ansi standard. Priam Europe (CW), Reading, Berks.



The AM-302 printer from Alpha Microsystems.

## Letter-quality printer

ALPHA Microsystems (GB) has announced the latest addition to its growing family of peripheral components, the AM-302 letter-quality printer which, it claims, can handle almost any word processing job, including correspondence, reports, labels, camera-ready text and multi-part forms. It can accommodate almost any paper size, including single-sheet, fanfold, and 1 to 5 part forms, in widths

from 3 1/4in to 16 1/2in.

"One reason the AM-302 is so versatile is that it offers something most printers don't - dual plastic/metalised print-wheels," said Richard Oliva, director of marketing. "The wheels are easily interchangeable as well."

Alpha Microsystems (GB) (CW), Berkshire House, 56 Barchel Street, Slough, Berkshire SL1 1PY. Tel.: Slough 621921.

01-491 4706



DALROTH

## Analyst Programmers

Basic Salary TAX FREE

Plus free accommodation, insurance, car allowance, flights, etc.

## PRIME 550/750 DBMS

Five Analyst Programmers are now required to join new and on-going development projects in the Finance, Accounting, Costing, Stock, Personnel, Production, Engineering Requirements and Process Application areas. Systems are on-line or real time, and are based on the DBMS Codasyl Database.

Although PRIME experience would be ideal, candidates should be familiar with database applications using COBOL for one of the above or related application areas. Other mini or possibly IBM 43XX experience would be considered.

Our clients are a major process industry organisation offering first-class working conditions in a stimulating and challenging working environment.

These are permanent opportunities, offering married status with schooling allowances, etc., after an initial period of single status, located in the Eastern Province in an area with very good social and sporting facilities.

For further details please contact Roger Allington or Jenny Dalrymple-Hay weekdays (8 a.m.-10 p.m.) on 01-493 2947 or weekends respectively Little Gaddesden (044284) 3538 Beaconsfield (04946) 4579 quoting ref. 9999/CW.

DALROTH & PARTNERS LTD., 4 HALF MOON STREET, LONDON, W1. Tel: 01-493 2947

(5108)

PROGRAMMER/ANALYSTS  
CHESSINGTON

£8,500 negotiable

We are a successful and expanding Company whose ICL ME29 and DR520 Micro computers are central to the development and operation of packaged software for the Defence industry.

We are now looking to expand our team with Programmer/Analysts to assist with future commitments. Applicants should have at least two years' practical experience of COBOL with preference being given to those with experience in DR5-Micro Computers, CIS COBOL, or QMAC 29 manufacturing database applications. In return we offer project variety and attractive working conditions.

Please write giving full career details to:

Mr R. G. Haskett  
DYTECNA LIMITED  
Roebuck Road, Chessington, Surrey  
01-397 3355

(5047)

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MARKETING PERSON

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(5108)

BOX  
NUMBERS

Box number replies should be addressed to:  
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c/o Computer Weekly  
Quadrant House  
The Quadrant  
Barnet, Surrey RM2 6AS

Single User Systems  
Applications Programmers

SERC has set up a Common Base Programme to provide a highly integrated scientific/engineering single-user workstation environment based on the ICL PERQ for its research community. The PERQ offers a high quality A4 display, good interaction via a tablet and 3-button puck, and 24 Mbyte of local disc filestore as well as significant cpu power. At present, software in the Common Base consists of a 32 bit virtual memory UNIX operating system; Fortran 77 and Pascal compilers; and the GKS graphics system. Communications for PERQ (X25 and Cambridge Ring Local Area Network) are under development, and PDP 11/70 and VAX 11/750 computers running UNIX are available as central backup machines.

The aim of the project is to provide a full range of basic software; current work includes window manager research and development, provision of a full-screen editor exploiting PERQ features, print servers, and high quality test procedures, as part of a programme to improve the user interface. Programmers are required with a range of experience. Knowledge of UNIX is not essential, but would be an asset. Applicants must be able to demonstrate sound programming practice and have interest (and preferably experience) in development of devices such as PERQ, with their high potential for good quality graphics and interaction, and hence vastly improved user interface.

Applicants should have a degree or equivalent qualification in a scientific, mathematical or engineering subject.

Appointments will be in one of the following grades depending on qualifications and relevant experience:  
Higher Scientific Officer £7,149-£9,561 Scientific Officer £5,682-£7,745

Some assistance with the expenses incurred in house sale/purchase may be available.  
The Laboratory is a friendly community with its own restaurant and sports facilities nearby. We offer excellent working conditions and benefits include a local transport service and generous holidays.

Application forms are available from: Recruitment Office, Personnel Office, Rutherford Appleton Laboratory, Science and Engineering Research Council, Chilton, Didcot, Oxon OX11 0QX, or telephone Abingdon (0235) 445435, quoting reference VR 135.

Technical information is available through Mrs S. Mitchell, Ext 5631.  
Closing date for applications: 8th September 1983.

(5048)

serc  Rutherford Appleton LaboratoryComputing & Electronics  
myriad  
Recruitment ConsultantsCOMMUNICATIONS  
SOFTWARE  
DESIGN ENGINEER

## BOURNEMOUTH AREA

X25 PACKET SWITCHING £9,000 to £12,500

If the idea of developing and implementing X25 Packet Switching Units on a major communications network appeals then this is the opportunity for you.

You will work in a team of eight or nine strong, and provide technical leadership for two or three Software Programmers. Your accountabilities will include extensive design and top down development activities using MASCOT and CORAL. Additionally you can look forward to working on a VAX-11/780.

To be considered you should offer a good educational background followed by about three to five years' real-time software development and knowledge of communications protocols and packet switching, preferably X25.

If you wish to find out more about this excellent opportunity and the extensive range of benefits available, please telephone Myriad on (0784) 591151 or write to the address below.

Computing & Electronics  
myriad  
Recruitment Consultants

30 Fleet Street, London EC4Y 1AA  
Telephone: 01-353 0981 24 hours  
25 South Street, Reading, Berkshire RG1 4QU  
Telephone: Reading (0734) 591151 24 hours

(5091)

COBOL  
Your key to a  
challenging career

"Do you have a minimum of one year's COBOL programming experience, gained in a commercial environment?" If so, this will open the door into the stimulating world of an expanding software house.

## SURREY to £9,000

Take this opportunity to become involved in all aspects of software development on new projects on a range of ICL and other equipment. Previous experience in an ICL environment would, therefore, be an advantage. Promotion prospects within the company are excellent.

The company is based in SURREY, with easy access from the M23. In addition to the excellent salary, the package includes free life assurance and subsidised pension and BUPA.

Interested, then contact Computant Limited Recruitment Agency, 14 Mount Pleasant, Tunbridge Wells, Kent. Telephone: (0892) 35712/3/4. 24 hours answer phone.

Computant

Contractors  
join the  
expanding  
agency!

Contractors, with new agencies springing up all the time, there's an awful lot to be said for working through a solid, reliable, financially stable agency with a first class reputation in the marketplace.

Span has been one of the leading contract agencies for nearly 8 years and can now boast its most effective and successful sales team ever. We are truly expanding quickly and efficiently and we need more professional contractors to fill our growing list of assignments.

Span Computer Contracts is just one company within a large international computer services group. Other companies in the group include Warwick Woodward Associates—one of the UK's leading recruitment consultancies and Taurus Technology—a market leader in the area of UNIX, C and ADA training, in addition to providing a full range of DP training. We also boast a flourishing company in Australia where we constantly need good technical expertise. Some of our current requirements are listed below.

## IBM Requirements

IMS DB/DC COBOL Progs  
PL/1 TOTAL Progs  
PL/1 MVS TS0 Progs  
PL/1 Progs  
CICS COBOL DL/1 Progs  
System 34 RPG II  
VM Systems Prog  
PL/1 IMS Jackson Progs  
8100 DPPX COBOL Progs  
DOS COBOL TOTAL Progs  
IBM Analysts (with CICS)  
IBM COBOL DL/1 Easytrieve  
Banking Analyst

## General Requirements

Foreign Exchange Analysts  
Univac 90 series COBOL  
Honeywell L66 DMIV TP IDS Progs  
UNIVAC 1100 DMS DPS COBOL & UNIDIS Prog  
NCR Near 3 Level 2 Progs

London/South/Home Counties  
West  
South  
Home Counties  
South  
Surrey/Berks  
East  
C. London  
C. London  
C. London  
South  
C. London  
C. London

South  
Home Counties  
C. London  
South East  
C. London

## Mins &amp; Micro Requirements

Z80 Assembler & Basic CP/M Progs  
Prime Systems Prog  
Z80 CP/M CIS COBOL Progs  
Graphics experience Systems Prog  
VAX FORTRAN VMS Systems Prog  
VAX VMS Basic Progs  
C Progs  
VAX COBOL and/or FORTRAN/BASIC  
CTL experienced Progs  
DEC PDP RSX Macro 11  
Tandem Systems Prog

Home Counties  
North  
W. London  
North  
North  
C. London  
All areas  
Home Counties  
Herts  
C. London  
South

## ICL Requirements

2900 VME/B IDMS All levels  
ME29 TME TP IDMS COBOL  
VME TPMS IDMS  
VME SCL Writer  
DRS Forms 2 Designer  
DRS CIS COBOL DRX  
System 25 Assembler Prog  
IDMS Consultants

London  
W. London  
All areas  
Wales  
South  
London  
London  
All areas

## THINKING OF GOING CONTRACT?

Span has a well deserved reputation for helping first time contractors. If you are interested in having a confidential discussion about the contract market, ring Phil Hart on 01-734 7394 or complete the coupon.

SPAN  
COMPUTER  
CONTRACTS  A SPAN GROUP COMPANY

43-44 GREAT WINDMILL STREET, LONDON W1V 7PA  
TELEPHONE: 01-734 7394 24 HOUR ANSWERPHONE

Mail the coupon to:  
Span Computer Contracts, Freepost 37, London W1E 6UZ.

I am an existing contractor ☐

I am thinking of going contract ☐

Name \_\_\_\_\_

Address \_\_\_\_\_

Tel: (h) \_\_\_\_\_

(w) \_\_\_\_\_

Job Title \_\_\_\_\_

Hardware/Software \_\_\_\_\_

Availability \_\_\_\_\_

Ref CW 18/8



## Sales Executives-rise to this challenge!

MAJOR ACCOUNTS SALES

NORTH OF ENGLAND

5 FIGURE BASIC SALARY

SUBSTANTIAL GUARANTEE

£25,000 TARGET EARNINGS

COMPANY CAR OR CAR ALLOWANCE

Since its inception over 15 years ago, the company has invested a higher percentage of income in product research than any other major computer manufacturer. This commitment has resulted in a steady flow of innovative and ingenious processors, peripherals, software and services. Further recent product releases and a sustained annual growth rate of over 20% have determined the need for continued expansion of their Major Accounts sales team.

The requirement is for a **SENIOR SALES EXECUTIVE** to work from their Northern Major Accounts Headquarters in Manchester. The successful candidate will need to prove at least 3 years of high level sales achievement in any of the following areas:

- Major Accounts
- Distributed Data Processing
- Mini/Mainframe Systems
- Large Turnkey Solutions
- Computer Services

Can you rise to this challenge? If so **ACT NOW!** - for a completely confidential discussion telephone **061-236 1157** during business hours or Evenings and Weekends until 9.00 p.m. telephone **JEFF WALTON** on 061-962 0002 or **DAVID EASTON** on 0270 580129

**INTERFACE**  
RECRUITMENT & SELECTION CONSULTANTS LTD

Manchester House, 86 Princess Street,  
Manchester M1 6NG. Tel: 061-236 1157.

(5103)

## IMPORTANT ANNOUNCEMENT CONCERNING

**MSA**  
The Software Company

Last week's edition of Computer Weekly inadvertently carried the MSA logo on two recruitment advertisements - "SALES MANAGER" and "CONSULTANCY" placed by Hutton Executive Selection Ltd on behalf of other clients

We wish to apologise for this mistake and to point out that neither of these advertisements related to MSA who are solely committed to packaged application software

## SOFTWARE DESIGNERS

CENTRAL LONDON WORLD LEADING SOFTWARE  
£10k-£15k DEVELOPMENT COMPANY

MSP is the World leader in Data Management/Dictionary driven Software Products for IBM Mainframe environments. In support of our continued expansion and success, additional positions have been created for Software Designers to work on existing and planned "State-Of-The-Art" products in our Research and Development Centre.

Applicants must demonstrate proven software design experience in an IBM Mainframe environment, preferably in the software products industry. Although not essential, preference will be given to applicants with previous programming experience in IBM Assembler.

Salary is negotiable dependent upon experience and career prospects are excellent in this progressive and expanding company.



Write, enclosing C.V., to Stephanie Sargent, MSP Limited, 71 Gloucester Place, London W1H 3PF or telephone Stephanie on (01) 486 3947 for an Application Form.

## REAL-TIME SOFTWARE ~ career advancement via SPC Communication Systems on the Dorset coast

**LATEST  
CCITT  
SIGNALLING  
PROTOCOLS**

**NEW  
TELETEX  
CONVERSION  
FACILITIES**

**SOFTWARE  
SUB-SYSTEMS**  
- control exchange  
configuration  
& Management  
reporting systems

**EARNINGS  
TO  
£15,000  
p.a. PLUS**

Our expanding Data Communications Division at Poole is currently building up engineering teams to work on several interesting and technically challenging data switching projects for home and export markets.

### PROJECT LEADERS

Typically they will lead up to a dozen engineers and will be fully involved at all stages from system design and specification through to acceptance testing. These jobs will provide considerable variety in relation to technical problem-solving software facilities and customer contact.

### DESIGNERS

The initial emphasis is on system design and programming and there are early prospects for further developing supervisory and technical skills.



Graduate or equivalent level, candidates should have substantial real-time engineering software experience. While some background in communications, telephony or related fields would be useful, we are equally interested in those who wish to gain experience in these areas, especially if they are familiar with process control applications or ASSEMBLER language.

Basic salaries will be up to £13,000 p.a. while overtime (at time and a third) and voluntary shiftwork will produce total earnings in excess of £15,000 p.a. Housing is reasonably priced at our superb coastal location, with modern starter homes available at £20,000 and three-bedroom detached houses ranging from £35,000.

To find out more including details of our comprehensive relocation plan, telephone Glyn Griffiths, on 0202 675161 ext 2028 reversing charges up to 6.30 pm on any weekday until 28th August. Alternatively complete the quick response coupon or write to him with full details quoting reference CWP/691 at Plessey Controls Ltd, Sopers Lane, Poole, Dorset BH17 7ER.

**PLESSEY**

(5067)

**QUICK RESPONSE COUPON** CWP/691

Name \_\_\_\_\_ Age \_\_\_\_\_

Address \_\_\_\_\_

Tel. Day \_\_\_\_\_ Evening \_\_\_\_\_

(If you wish to state) Present job title and nature of work \_\_\_\_\_

(You must on separate sheet if required)

Software engineering experience (years) \_\_\_\_\_

Name of present employer and present salary \_\_\_\_\_

(If you wish to state)

I am interested in (posts applying for) \_\_\_\_\_

## WHAT COMES FIRST PRODUCTS OR PEOPLE?

With Ericsson the answer is both. By always putting people first, Ericsson has established some of the most user-friendly products in the world. The resultant success of these products has meant ever increasing opportunities for more people within their marketing and support organisations. So in the case of this advertisement, the successful products have come first.

Ericsson has the products, the financial backing and the R & D resources to maintain the lead in the race to meet the world's rapidly developing demand for Information Processing Systems. A demand that requires a further increase in staff so that the best products continue to have only the best sales and service teams behind them.

Ericsson Information Systems Limited - part of the international telecommunications giant, Ericsson, and pioneer of ergonomically designed terminals - has won universal acclaim for its advanced, highly versatile, Alifaskop multi-function workstation. Over 100,000 have already been installed world-wide with the majority connected to IBM computers. The quality of multiple host emulation, together with the multi-function capabilities, such as word processing and personal computing, place Alifaskop well ahead of the field.

By the end of the decade Ericsson Information Systems aims to be the leading supplier of office technology and information processing systems in the world. But it cannot be achieved without the right people. The kind of dedicated staff that see the value in investing their future in a rapidly expanding company, and of course in the rewards to be derived from that success.

Negotiating at senior level and meeting the high standards of product knowledge and professionalism means that Ericsson executives must not only be technically competent but also have the confidence which comes from proven success in selling to major companies.

Ericsson is now seeking a Regional Sales Manager and nine Alifaskop Executives to be based in various locations, together with Field and Commissioning Engineers to augment the already established national network. This requirement is just part of the general trend of expansion within the company.

**REGIONAL SALES MANAGER**  
£27,000 per annum

The successful applicant for this position will work with a product with enormous sales potential. He will have the kind of drive and personality that enables him to lead and co-ordinate a highly professional team of sales executives as well as meet the demanding standard of product knowledge which Ericsson customers expect. An income package will be in the region of £27,000 per annum.

**SALES EXECUTIVES**  
£25,000 per annum

Applicants for these appointments will be capable of negotiating at all levels. Their technical competence must be accompanied by the confidence which comes from at least two years' proven success in selling data terminals or related products to major companies. It is unlikely that anyone under 25 will have the technical and business acumen we are seeking. The income package will be around £25,000 per annum with potential for much more. Sales Executives will be based in London, Stockport, Bristol and the Midlands.

**FIELD ENGINEERS**

Sales personnel will have the back-up of experienced Field Service Engineers who Ericsson regard as a key component in the general sales success of the company. Opportunities exist for applicants to extend this team. Experience preferable in terminals, peripherals and/or computer systems.

Qualified candidates should apply in writing by sending career details to Mike Bajeson, Marketing Director, Ericsson Information Systems Ltd., Swan Office Centre, 1508 Coventry Road, Yardley, Birmingham B25 8BN. Alternatively, telephone Richard Jackson on (011) 422 1442 or Mike Green on (011) 707 3050, or write to him with full details quoting reference CWP/691 at Plessey Controls Ltd, Sopers Lane, Poole, Dorset BH17 7ER.

I am interested in applying for the position of:

☐ Regional Sales Manager

☐ Sales Executive

☐ Field Engineer

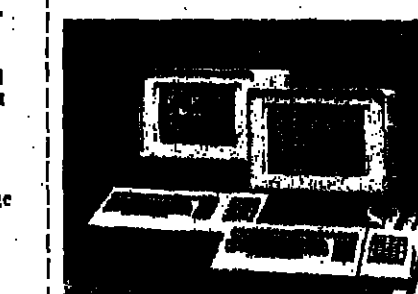
☐ Other Marketing or Technical Support positions

Please send me an application form

Name \_\_\_\_\_

Address \_\_\_\_\_

Telephone \_\_\_\_\_



**ERICSSON**

Ericsson Information Systems Ltd  
Swan Office Centre 1508 Coventry Road  
Yardley, Birmingham B25 8BN  
Telephone: 021-707 3050



**RPG II/III****RPG III NORTH LONDON**  
To £12,500

Work locally for an expanding, established finance company in North West London. Housing an IBM System 38 they require 18 months' RPG III experience, the ability to fit in with a friendly team, and take responsibility for major development projects. Superb offices and excellent financial rewards. REF. C/2696

**RPG II EAST LONDON**  
To £12,000

A first class opportunity to join this international company who are the leaders in their field. They are seeking to recruit a good Programmer/Analyst with IBM System 34 RPG II background. Self-motivated and a mature outlook are the essential requirements for this exciting position. Excellent career prospects along with the possibility of some European travel. REF. G/2657

**IBM SYSTEM 38 LONDON**  
To £13,000

We currently have 6 software houses in the Central London City area seeking your RPG III expertise. If you are bright and a good communicator, then 12 months' experience will be considered. There are also more senior roles available for Analysts/Programmers with design and implementation experience. Most of your work will be London based. REF. C/4815

**ANALYST/PROGRAMMER LONDON** To £11,000

Due to continued company expansion, this leading manufacturing concern, are seeking an additional IBM S/34 RPG II Analyst/Programmer. This position is ideal for someone with in-depth S/34 skills. The work is 85% on-line development, with the possibility of the company upgrading to an IBM System 38 in the near future. Benefits include subsidised restaurant and interest free season ticket loan. REF. G/2651

**IBM SYSTEM 34 CITY**  
£12,000

This is an Analyst/Programmer role requiring 3 years' IBM System 34 RPG II, and strong analysis skills. The ability to lead a small group would be advantageous, and the desire to progress fairly rapidly to a senior position. Some opportunity to work with Micros in COBOL. REF. C/2589

**IBM SYSTEM 38 RETRAIN**  
c.£12,000

Very strong IBM System 34/RPG II technical skills are required for this outstanding opportunity. Retraining on the IBM System 38 will be immediate and you will be involved with the implementation and support of various systems. Good user contact would be an added advantage as would the ability to speak French, although not essential. For more information on the position please contact me. REF. G/2692

**RPG III CITY**  
To £13,000

Highly reputed software house, with large multi-national clients, require additional IBM System 38 consultants with the ability to liaise with people at all levels, including financial directors. Excellent RPG III skills coupled with a good business awareness are the main requirements. You will be working on major development projects and training in analysis will be given. In addition you will be well rewarded in terms of salary and benefits. REF. G/1390

**IBM OPPORTUNITIES****PROGRAMMER/ANALYST EAST LONDON/ESSEX**  
To £9,500

Can you offer a minimum of 12 months' IBM COBOL and/or ASSEMBLER experience? If so you will become involved with the development of a major insurance system. The company retain an IBM 4341 under DOS/VSE using CICS and DL/I, and CICS training will be given where necessary. The ideal candidate would be self-motivated, and seeking real career advancement. Benefits include sub restaurant, non-contributory pension scheme, BUPA, and sports and social club. REF. G/1245

**CICS PROGRAMMER LONDON**  
c.£11,000

World-wide distribution company requires a programmer with a minimum of 2 years' IBM COBOL, and 6 months' CICS experience. This is a superb opportunity to work on a database development team working IBM 4341, DOS/VSE, CICS and DL/I, and you will be involved in International Systems Development. Positions are also available for Analyst/Programmers with 2 years' IBM COBOL, and a programmer who would like to move into a systems analysis role. Call me for full details. REF. C/2649

Brushfield House, 12 Brushfield Street  
Bishopsgate, London E1 6AN  
Telephone: 01-247 3356 (24 Hours)

**JUNIOR PROGRAMMER/CICS**  
To £7,500

A first class opportunity to be fully trained in CICS applications. Entertainment Company is seeking a bright young Programmer with about 12 months commercial IBM COBOL experience to work on their IBM 4341 under DOS/VSE with CICS, on a variety of commercial applications. Full training and excellent benefits including L.V. discount on products, life assurance. REF. C/2653

**IBM PL/I CITY**  
c.£9,500 + Mort

Prestigious banking organisation based in the City of London are seeking an ambitious programmer with 18 months' IBM PL/I experience to become an integral member of a development team working on various financial projects. The company house IBM 4300's running OS/VS1 going to MVS. The successful applicant will receive full training in Database techniques, and all aspects of systems design. A full banking package is offered which includes mortgage subsidy. REF. D/2651

**ANALYST/PROGRAMMER CITY**  
c.£11,000

This highly respected financial company, located in the heart of the City, require an experienced IBM COBOL Analyst/Programmer to work on an IBM 4341 using DOS/VSE, VSAM and CICS. With the wide range of development projects that are currently under way, and planned for the future, they can offer excellent scope for career progression, with a unique opportunity to be involved with advanced systems. REF. G/2367

**PROGRAMMERS BERKS & MIDDLESEX**  
To £9,500

There are many new positions now available in Berkshire, West London and Middlesex for ambitious programmers wishing to increase their skills. My clients require 18 months' IBM COBOL under MVS or DOS/VSE in a commercial environment. You will be working in a development capacity, utilising CICS, DL/I or IDMS database in the retail, manufacturing or transport industry. REF. C/24406

**OTHERS****MICRO BASIC LONDON/NOTTS**  
Neg.

Expanding systems house with offices in London and Notts. are currently seeking ambitious individuals with a minimum of 12 months' commercial experience in BASIC programming with CP/M. The successful applicant will be engaged in developing a range of commercial systems including stock control, production control and various accounting systems. This is an outstanding opportunity to allow an ambitious individual to expand their knowledge and progress their career. REF. D/26567

**ICL COBOL**  
£6-£8,000

Exciting opportunity for a Programmer with a minimum of 12 months' ICL COBOL experience to join this prestigious manufacturing organisation based in Middlesex. You will assist in the development of sophisticated manufacturing and manufacturing projects. The company are offering a good training program with opportunities to gain new skills, and the chance to progress into analysis. A good salary is offered and benefits include annual bonus, pension scheme, subsidised lunches and plenty of advancement opportunities. REF. D/2658

**HEWLETT PACKARD - ANY LANGUAGE**  
c.£9,000

Can you offer a minimum of 6 months' Hewlett Packard 3000 experience in any language? My client, based in Central London is seeking an ambitious Programmer to take part in new development projects of an extremely high standard. Applications range from accounts to commercial, and you will receive training in a variety of languages including SPL, COBOL, BASIC and RPG II if necessary. You will become involved in user liaison, and there is scope for progression into analysis. REF. A/1010

**HONEYWELL - COBOL**  
£9,000

My Barks-based client, housing Honeywell L64 GCOS kit is seeking an Analyst/Programmer with in excess of 12 months' relevant Honeywell experience to join their development team. You will be involved in the writing of specifications and subsequent programming on commercial manufacturing systems. The company offer 5 weeks' holiday, sports and social club, subsidised restaurant in their package. REF. A/2356

**DEC/PDP/VAX - BASIC + 2**  
£5,000

An exciting opportunity for an Analyst/Programmer with in excess of 1 year's DEC/PDP or VAX in the City. My clients, a professional bureau organisation, seek ambitious individuals to deal directly with clients, in a commercial capacity. You will be responsible for the development of a variety of systems including: Commodities, accounts, financial and commercial. Graduate status would be an asset although not essential. REF. A/2646

**PRIME/DEC SURREY**  
£8-£12,000

Survey-based consultancy are currently seeking Analyst/Programmers with 2 years' experience on PRIME, DEC VAX and PDP 11 computers. The successful applicant will be able to demonstrate skills in one or more of the following sectors: commercial, scientific or telecommunications. You will be involved with program development, programming, software packages and some analysis work. An excellent salary is offered along with additional benefits including pension scheme, bonus scheme, health scheme, and excellent promotion prospects. REF. D/3210

**ICL ME29 CITY**  
To £10,500

This is an excellent opportunity for a Programmer to take up a key position within this well established insurance company. The company house 2x ICL ME29 running under TME. Applicants should have a minimum of 18 months' ICL COBOL experience, with extensive exposure to TFS. You will play an integral part in user training, coding, design and implementation of a range of insurance and business systems. This is a new position offering career prospects, in-house education, exciting development projects, and a pleasant and flexible working environment. Excellent package including subsidised lunches and 4 weeks' holiday. REF. D/2452

**MAJOR ICL DEVELOPMENTS SURREY**  
£9,500 + Mort

This Survey-based insurance concern currently in the process of developing new systems are offering interesting work to Programmers and Analyst/Programmers who can offer 18 months' ICL COBOL experience. Experience of VME would be desirable and will be rewarded accordingly. Full training is offered in database techniques, TP systems, and aspects of system design. This is an excellent opportunity to gain varied and practical experience while pursuing a worthwhile career. Company benefits include 4 weeks' holiday, subsidised restaurant and pension scheme. REF. D/1759

**RETRAIN - ANY COBOL**  
c.£10,500

My Essex-based client is seeking a mainframe COBOL Analyst/Programmer with in excess of 3 years' on-line and database expertise. You will be given extensive training in the latest Honeywell kit and techniques. As a Senior Analyst/Programmer here you will immediately be involved in challenging database development projects including completing systems design work. The systems are of both a commercial and financial nature. Benefits include 5 weeks' holiday, subsidised restaurant, company car, non-contributory pension scheme and social club. REF. A/1712

**DEC/PDP - BASIC +**  
c.£10,000 - Relocation

This Survey-based organisation, is seeking an Analyst/Programmer within excess of 2 years' DEC BASIC+ experience hopefully but not essentially with RS/VS. They offer the chance for you to become involved in commercial development projects whilst furthering our skills, with an extensive training program. The department is divided into small teams thus giving outstanding and permanent career prospects. The company offer a non-contributory pension scheme, flexi-time and a full relocation package (where appropriate). REF. A/2417

**HEWLETT PACKARD - COBOL**  
c.£9,000

Based in Berkshire, this company have recently taken delivery of a new HP3000 using IMAGE, VIEW, QUERY and COBOL. Consequently they require an Analyst/Programmer with 12 months' relevant experience on HP kit. You will be given responsibility for user liaison, writing specifications and completing programming and implementation duties. Applications range from accounting to commercial. This is an excellent opportunity for you to become involved on the ground floor of an expanding department. Company benefits are good and include a substantial bonus scheme. REF. A/3104

**Technical Services Assistant**  
[Systems Analysis]

up to £11,511 [under review]

British Gas Corporation [HQ] are among the leading offshore operators adopting computerised process control for their storage and reproduction process.

They therefore require a Technical Services Assistant to ensure the effective and efficient operation of all computer systems, including guidance to staff as to the selection and use of computer systems and software. He/she will be responsible to the Control and Instrumentation Engineer for the development of both software and hardware for process control, alarm and monitoring systems.

He/she will ideally possess a Diploma in Computer Science, or a degree in a numerate discipline, together with experience of systems programming, mini and micro-computers, and software development projects.

Salary will be in the range £9,952 - £11,511, currently under review.

This position carries the range of benefits normally associated with a large and progressive organisation. To apply, please write with full career details, and quoting reference number REA/512301, to: Senior Personnel Officer [HQ Services], British Gas, 59 Brynston Street, London W1A 2AZ.

**BRITISH GAS****Technical Manager**

- large-scale banking systems  
London Excellent salary

In meeting the challenges of international banking throughout the 80s, Chemical Bank is currently embarked on an aggressive strategy of international branch automation. This involves IBM System 38, Database, integrated banking and communication systems, and microcomputer-based networked trading systems, utilising leading-edge technology.

We now require a Technical Manager to co-ordinate the design, development and programming of new data processing applications for the Bank's Overseas Branch System, and to provide technical guidance to Project Management and programming resources.

A minimum of 5 years' systems design and programming experience is essential, together with at least 3 years' experience of IBM System 38 facilities and technical attributes. A degree-level qualification is also required.

A highly competitive salary will be commensurate with experience, and a valuable benefits package includes profit-share scheme, mortgage subsidy, personal loan scheme, BUPA, interest-free season-ticket loan and, if appropriate, assistance with relocation.

Please apply in writing with full details of age, qualifications, experience and current remuneration to the Personnel Manager, Chemical Bank, Chemical Bank House, 180 Strand, London WC2R 1ET.

**CHEMICAL BANK**  
An equal opportunity employer.

**DP SUPERVISOR**

£10,500 BASIC + 15% Bonus

Our client, INMAC are shortly to open their WEST LONDON Distribution Centre and need an experienced person to manage new Data General equipment. Candidates in their late 20s must possess the appropriate skills. Please apply to Peter Barnett quoting CW/8289 at Barnett Consulting Group Ltd., Providence House, River Street, Windsor, Berkshire SL4 1QT. Tel: Windsor (07538) 56723

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**Satellite Comms.**

LONDON

£10,500-£13,000

Our client is the world's leading organisation for supplying electronic information to the media and financial community. They have one of the largest private communications network in the world which is about to be replaced. At this exciting development phase candidates with a minimum of two years' experience of programming in high level Real Time languages such as PCM/86 or PASCAL under the RMX/86 or VMS operating systems are required. GMF33/1

**Data Communications**

LONDON

UP TO £16,000

Our client is currently engaged in developing Software for the communications industry. They are seeking qualified Consultants with experience of communications standards and protocols, LANs and Office Automation. The company offers good salaries, good experience and an excellent career structure. DLM33/2

**Communications**

BEDFORDSHIRE

£8,000-£10,500

A systems engineer is required to work on the development of state-of-the-art communications systems products. This will include controller design, implementation, microcode, test software and systems software for high speed X25 and other network products. Applicants who hold a degree, with at least 2 years' experience of both hardware and software disciplines should apply. GMF33/3

**Local Area Network Designer**

HERTS

£12,000-£16,000

A leading manufacturer of terminals, modems and networks requires a Senior Engineer to join a small team defining a new generation of multiplexor products. The successful candidate will be responsible for the investigation, specification and design of local area network interfaces for new generation equipment. The position requires at least four years' design experience in a high technology environment. Applicants should have experience of at least two of the following: data communications, LANs, 16 bit microprocessor board design, Assembler for real time applications, multiprocessor systems design. GMF33/4

**DATAMATICS RECRUITMENT SERVICES**

01-399 9183

Datamatics, Freepost, Surbiton, Surrey KT6 5BR

**Navigation Systems**

SURREY

To £16,000

One of Britain's leading information systems contractors is seeking a consultant to work on Navigational Systems in marine and aircraft systems. Ideally the successful candidate will have a numerate degree plus five years' experience in the design and assessment of digital systems for inertial navigation, integrated navigation-radio and satellite. DLM33/5

**Communications**

CENTRAL LONDON

Up to £18,000

One of the most respected Systems Houses in England is seeking highly experienced Senior Staff for the very specialised area of Military Communications. Ideally future technical consultants will have at least four years' experience in communications or CP environments. Successful candidates will be responsible for handling radio links, packet systems to fully automated switch systems, and data links etc. DLM33/10

**Sonar Systems**

MANCHESTER

£9,000-£14,000

Our client is a major manufacturer of real-time computer systems for commercial and military applications. They are a creative force in electronics and are currently looking for experienced consultants to develop real-time computer systems. Currently under development are systems for sonar, radar, target tracking, communications and engineering. Successful candidates will be responsible for the design and development of engineering systems for real-time computer systems. In real-time computer systems and engineering. DLM33/11

**X25/LANs**

£9,000-£13,000

Our client is a leading provider of local area network (LAN) and X25 services. They are seeking experienced consultants to develop and implement LAN and X25 systems. Successful candidates will have at least 3 years' experience in the design and implementation of LAN and X25 systems. DLM33/12

**DATAMATICS RECRUITMENT SERVICES**

01-399 9183

Datamatics, Freepost, Surbiton, Surrey KT6 5BR

**Image Processing**

NORTH LONDON

£9,000-£10,000

A highly respected manufacturer of image processing systems requires additional Software Engineers, to work on digital processing systems. You should have had at least one year postgraduate industrial experience and have programmed in Assembler during this period. Creative flair, committed interest and the willingness to succeed will result in extensive opportunities for career advancement. GMF33/5

**Process Control**

LONDON

£11,000-£17,000

The Industrial Group of a leading Software Company seek Consultants and Designers to develop process control software for the food, drink and drug industries. Candidates, dependent on level of experience will be offered a number of positions such as supervising projects, developing software on large projects, assisting sales teams in a technical support role and producing specifications. DLM33/6

**Modems Design**

HERTS

£10,000-£15,000

An engineer is required by a leading equipment manufacturer. Our client is ideally situated north of London, well served by rail and road. You will develop new microprocessor-based modems and local area network products and be expected to take a product from conception to production. A degree is highly desirable whilst at least two to three years' design experience with microprocessor-backed logic systems is essential. GMF33/8

**Graphics/Cad**

WEST COUNTRY

To £11,000

A London-based Systems house is currently seeking scientific programmers to work on site in the West Country for a minimum of two years. Candidates should have experience of Fortran on VAX machines and an interest in graphics-type applications. In addition Programmers with Coral are required for engineering systems. DLM33/7

**DATAMATICS RECRUITMENT SERVICES**

01-399 9183

Datamatics, Freepost, Surbiton, Surrey KT6 5BR

**Software Research**

WEST COUNTRY

£NEG

One of the world's most innovative producers of Microprocessor-based Signalling and Control Systems requires Software Professionals to develop Real Time Software. Successful candidates should have a degree plus a minimum of 2 years' Real Time Software, while Hardware appreciation would be helpful. DLM33/13

**Electronic Systems**

WEST COUNTRY

£NEG

Our client requires software programmers with experience of Real Time systems and design analysis. Main equipment includes H.P. 1000 systems under RTE, Micros, Intel and Texas. Candidates should be familiar with a structured high level language such as CORAL 88 and/or PASCAL. DLM33/14

**Military Applications**

LONDON

Up to £15,000

A top consultancy commanding large contracts with the MoD require Professional Programmers and Software Designers to work on Real Time Defence Systems. Candidates should have a degree plus experience of CORAL and preferably MASCO. Experience of CONTEXT and VAX machines would be helpful. Successful candidates' careers will benefit enormously by being associated with one of the top names in the industry. DLM33/15

**A to Z of Software Development**

Listed below are selection of skills and application areas we require for a number of clients at present:

ADA ASSEMBLER, Automotive Systems, Building Micros, Circuit Board Design, Communications, Concept Studies, Control Systems, Coral, Database Design, DEC/VAX, Defence Systems, Digital Electronics, Expert Systems, Graphics, Hydrodynamics, Image Processing, Intel, MacB II, Main Machine Interface, Mapot, Mathematical Modelling, Navigation, OR, RSX/VMS, TR1, Signal Processing, Simulators, Statistical Techniques and Underwater Acoustics. DLM33/16

**DATAMATICS RECRUITMENT SERVICES**

01-399 9183

Datamatics, Freepost, Surbiton, Surrey KT6 5BR

**ENGLEDOWN**

COMPUTER PERSONNEL CONSULTANTS



## your appointments register

### Programmers

**NCR/IBM/COBOL** to £15K  
Insurance/Banking London/H. Counties/N. Eng.

**COBOL/PL1/OS/CICS/IMS** to £13K  
Commercial H. Counties/Midlands/Manchester

**DEC/PDP 1170** to £11K  
COBOL Surrey

**HONEYWELL** to £12K  
Systems Programming experience Middlesex/London

**DATA GENERAL ECLIPSE** to £11K  
Cobol Leicestershire

**SYSTEMS 34/36/38/RPG2** to £12K  
Insurance/Commercial London/Home Counties

**IBM** to £16K  
System exp. Essex

**BASIC** to £11K  
Mini Computers London

**IBM/UNIVAC/COBOL** to £12K  
On-line/Database Surrey

**NCR 8200** to £14K  
Financial SW LONDON

### Analyst/Progs

**PRIME CAD/CAM** to £11K  
Home Counties/E. Anglia

**IBM 34/38/4341** to £15K  
London/Home Counties/North

**ICL 1500/ME29/2903** to £12½K  
COBOL Essex/Herts

**IMAGE PROCESSING C/UNIX** to £12K  
Scientific Applications

### Hardware/Support

**APPLICATIONS ENGINEER** to £15K  
Peripherals Support/Microprocessor Systems London Plus International Travel

**CUSTOMER SUPPORT** to £10K  
Basic Hampshire

**SUPPORT ENGINEER** to £15K  
London/Europe/Amsterdam

**EXP. SOFTWARE TECH. AUTHORS** £ NEG.  
Datacomm/Operating Systems/Telephony/etc. Europe

**PROJECT ENGINEER** to £11K  
Systems/DEC Beds/Mercheshire

**SOFTWARE SUPPORT** £ NEG.  
Medical/Training/Technical Berks/Herts

### Systems Analysts

**IBM/ICL** to £12K  
Stock Control/Commodity Control London

**CAD/CAM** to £16K  
Real time/Modelling Man/Essex/South West

**IBM/BURROUGHS** to £15K  
Commercial Accountancy London/Surrey/Manchester

**IBM/PL1/DL1** to £11K  
Database Support Middx.

**ICL/ME29** to £16K  
Commercial Design Herts

**IBM SYSTEM 34/38 MAAPICS** to £13K  
Sussex

### Software Engineers

**CORAL/PASCAL/MASCOT/C** to £13K  
Communications Glouce/Hants/Sussex/Midlands/Manchester

**REAL TIME/ASSEMBLER** to £13K  
Microprocessor Design Suffolk Coast

**MILITARY SYSTEMS/RADAR** to £14K  
Coral/Mascot Hants/Surrey/Essex/S. West

**PDP/VAX/INTEL** to £13K  
Telecomms - ATE Derby/Surrey/London/Kent

**COMMS/TELECOMS/MOD** to £14K  
Mini/Mainframe E. Anglia

**HP3000/INTEL** to £12K  
CAD/CAM/ATE Home Counties

**TERMINAL EMULATORS** to £15K  
C/Assembler London

### Snr Appointments

**PROJECT LEADER** to £15K  
Military Systems Berks/Hants

**SALES EXECUTIVES** to £25K  
Micros - Minis Peripherals, etc UK & Overseas

**CONSULTANT** to £15K  
Military/Defence Berks

**SYSTEM PROGRAMMING** to £15K  
Digital/RSTS/E, BASIC Bucks

**TEAM MANAGER** to £17K  
Computer Modelling/Fluid Flow S. London

**ICL/PRE- AND POST-SALES** to £16K  
SUPPORT Berks

**SOFTWARE SECTION MANAGER** to £18K  
Pascal/C/Microprocessor Essex/Middlesex

## SENIOR SALES CONSULTANTS

LONDON AND BIRMINGHAM £15,000-£30,000

An ideal opportunity to join a small expanding company with the option to become an integral part of the management team. Our business is in contract and permanent personnel placements. A fast moving and exciting environment for salespeople who prefer quick results and immediate rewards.

We need senior sales consultants with a successful track record for both London and Birmingham offices. You must be able to demonstrate the ability to:

- Be a self-starter possessed with the will to succeed
- Capable of exceeding your target regularly
- Have a strong personality and positive attitude
- Give client presentations

Company benefits are excellent for the high performers. Please send a detailed history with performance achievements to the address below. All replies will be treated in the strictest confidence.

Box No 1269, Computer Weekly, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS.

(B112)

### SPECIALISTS IN COMPUTER CAREERS

## DOUBLE TOP

Two challenging opportunities in Middlesex

### MVS Systems to £20k plus car

Demonstrate a thorough knowledge in all aspects of MVS Systems programming, then add your effective user liaison skills and you will score a bulls eye with this world leader in mainframe computers. Continued expansion and a full order book has led to this support and development requirement and the company will pay handsomely for the right person, to include a prestige car, free health scheme, non-contributory pension etc.

### Micro-Systems c.£12k

Dart into this newly created role within an unusually flexible DP department, determined to make full use of micro capability for diverse user requirements. You will assume project responsibility over a range of commercial applications using stand alone, network and mainframe - interface solutions. Good BASIC is a pre-requisite, while a knowledge of graphics or CAD/CAM would be of added interest to this high-tech manufacturing company.

RING JOHN GRAFHAM or send your c.v. for his attention (evenings/weekends) ring 06285 23517.

(B120)

**Conquest**  
RECRUITMENT

Conquest Computers Ltd  
93 Whitby Road  
Slough  
Berkshire

(0753) 821644

# UNIX\* & 'C'

## Developing the Automated Office with a Major Computer Manufacturer

Today's job market presents a bewildering assortment of opportunities to employ your skills in this universally accepted software technology and you will certainly want to ensure that you keep up-to-date with the latest developments in this expanding area of the computer industry. Nowhere are these technologies evolving faster than in the dynamic Office Automation market where data processing, word processing and communications integrate and converge.

We are the European subsidiary of a major North American Corporation recognised as a world leader in digital technology. Due to expansion in our business and product range, we have established a European Development Centre based at our Headquarters in South Hertfordshire to undertake development of a whole new generation of systems products for the European market. During the last few months we have attracted some of the most talented and creative individuals from all over the country and we are now in a position to offer a number of outstanding opportunities to experienced Software Development Engineers in order to complete our R & D team.

The structure within our development centre encourages the opportunity to enhance and develop your skills by working closely with a multi-disciplined, highly motivated team. Our new location is attractive and offers first-class facilities to ensure that your contribution is visible and valuable.

There are a host of reasons why you should talk to us about your next career move. Quite simply, we are convinced our environment provides the best possible platform for developing your skills. Our flexible attitude to salary and benefits means that we are genuinely prepared to offer salaries commensurate with your experience.

To find out more and to arrange a prompt interview, please call **Alan Carnell** or **Steve Stark** on **01-935 0671** (24 hour answering service) or in the evenings and at weekends **01-871 0338**.

\*UNIX is a Trade Mark of Bell Laboratories.

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**SOUTH**  
James House, 40, James Street  
London W1M 5HS  
01-935 0671/486 0461

**MIDLANDS & INTERNATIONAL**  
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Manchester M3 2ER  
061-833 0427

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Boite 4, 1050 Bruxelles  
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**RECRUITMENT CONSULTANCY**LONDON & BIRMINGHAM  
£15-£25,000 P.A.

T.C.R. are seeking to expand their range of Advertising and Recruitment Services to the Data Processing Sector by the addition of a number of Consultants. The people we are looking for will be able to demonstrate a good track record in permanent or contract recruitment with experience in computer services or systems and programming. Probably aged between 25 and 35 the successful candidates will have a good level of education and possess the inter-personnel skills necessary for these challenging and rewarding positions. A very high level of income is envisaged for those with the ambition and determination to succeed, the remuneration package consisting of basic salary, commission, guarantee bonus, health, car plan and company car where appropriate.

**MIDLANDS OPPORTUNITIES**ALL LEVELS  
£8-£16,000

There are currently a wide and interesting range of opportunities for systems and programming staff in the Midlands. We have been requested by our clients to locate SOFTWARE DESIGNERS, SUPPORT STAFF, TEAM LEADERS AND ANALYST/PROGRAMMERS with a minimum of 12 months' commercial experience. The kind of skills required would typically be included in the following: DATABASES, BASIC, BASIC + or + 2, RSTS/E, RSX11M, VAX VMS, HP3000 and utilities, all IBM. If your career is leading nowhere, or you're bored or in a rut a quick call to our BIRMINGHAM office is needed to arrange a confidential discussion and objective assessment of your potential with no obligation.

**Targa Computer Recruitment**6 Liverpool Street London EC2M 7NH  
Monaco House Bristol Street Birmingham B5 7AS**INTERNATIONAL CONSULTANCIES  
ANALYST/PROGRAMMERS**

£10K-£20K + EXPENSES + TRAVEL

Several of the larger, well-established consultancies are currently undergoing massive recruitment campaigns. Their requirements are as FLEXIBLE as your needs. If you have any three of the following attributes - COBOL, PL/1, CICS, DL/1, ADABAS, IDMS, IMS DB/DC, EASYTRIEVE, VOLLIE, ROSCOE, ADF, TSO/SPF, UFO, MK IV, SHADOW, ADS/O - you could soon be working in this fast and rapidly expanding environment. Obviously the more versatility you can offer our clients, the better the salary they can offer you. At a more senior level, salaries can be up to £20K plus expenses and European travel. These are ideal opportunities for programmers with around two years' experience wishing to expand their knowledge, as extensive TRAINING will be provided. If you're interested in getting out of that day-to-day end-user rut, contact SIMON KONING to discuss these exciting opportunities further.

**ANALYST/PROGRAMMERS**ICL 2900  
£9-£16,000

A leading consultancy/software house whose main areas of work involve management services staff. An ICL 2900 background with VME/B, VME 2900, TPMS and IDMS would be ideal but also of interest are Data General and HP3000 experience. The work would be both interesting and rewarding with some of the largest companies in the UK as clients. Current projects include work within the public sector, government systems and systems software development using CAFS ISP. A minimum of two years' experience is required together with the personality to match a technically challenging environment. You will be encouraged to assume as much responsibility as you can handle, giving a high level of job satisfaction. The company will offer a competitive salary in line with your background and a comprehensive range of benefits - they believe in career development and will regularly review salary and status.

**CHAPMANS**Stationery, Paper & Print  
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Janitorial Systems**ANALYST/PROGRAMMER**to £9K + Relocation Assistance  
Herefordshire

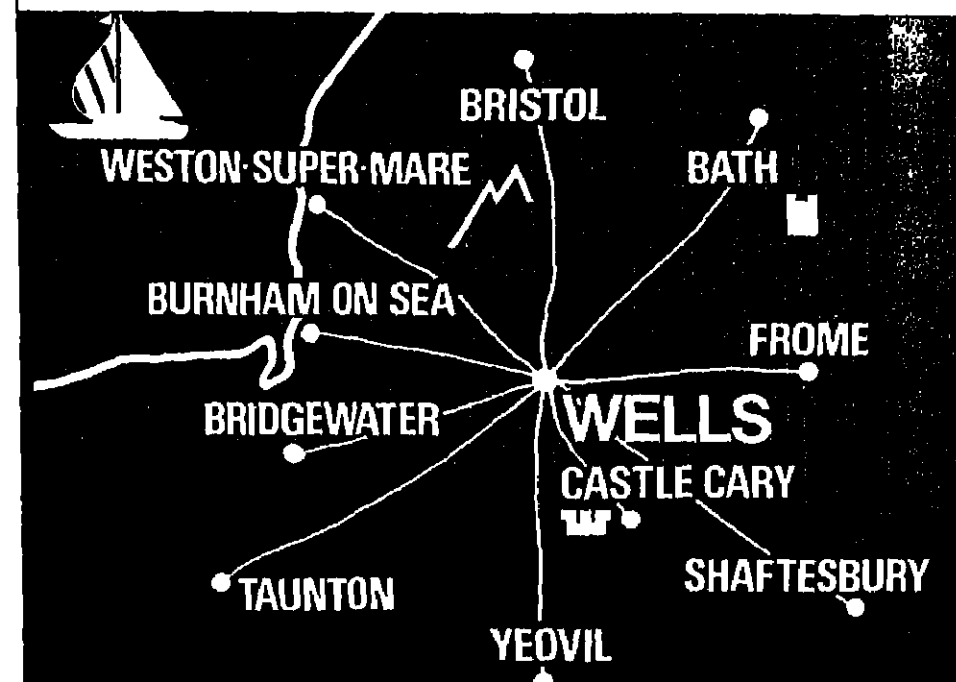
This is an interesting position with technical challenge and career prospects in a most beautiful country town setting.

The position requires good technical ability and experience, preferably gained in an HP3000, COBOL, IMAGE environment, although applicants with other experience and sound commercial programming skills will be considered.

As the second person in this DP Department, which has plans for an impressive programme of developments, you would be required to communicate with users, produce specifications, write, test and implement programs, and generate the necessary documentation. This must be achieved with the minimum of supervision and the successful person will have the capability for deputising in the absence of the Data Processing Manager.

The Company, part of a large Group, is a national supplier and distributor of an exceedingly wide range of office equipment and stationery supplies. The success of the Company is undisputed, and a programme of development including the doubling of turnover within three years has just commenced. For the right people there exists real prospects for career development within the Group.

Applicants for this position are invited to write with CV or request for an application form to Paul McBurney at the address below, or telephone him on 0905 611512 office hours or 0905 611645 evenings and weekends.

Computer Personnel & Executive Development Associates Limited,  
Old Bank House, Bank Street, Worcester, WR1 2FW.**SOFTWARE PROFESSIONALS****COULD YOU DISPLAY THIS DATA?**

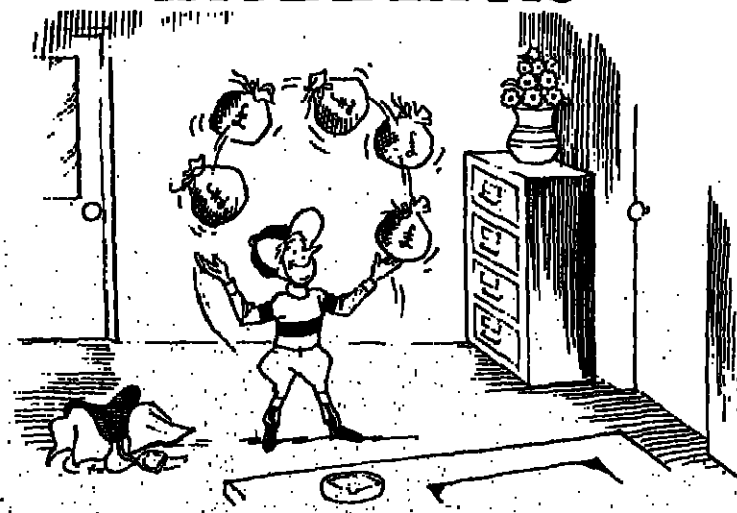
We've just been selected to produce a new range of computer driven data display consoles. It is one of the challenging projects we are currently working on at Wells.

If you are an experienced Graduate Analyst, Software Designer or Programmer, have a proven record and seek to widen your experience we would like to hear about you.

We are looking for people with 3 to 10 years' software experience, (though we also have some vacancies for well qualified recent graduates). Your experience should be in methodical design of modular real-time software for minicomputer systems or microprocessor firmware development.

We offer good future prospects in both military and civil fields at this expanding site, coupled with large company benefits. Salaries are competitive according to qualifications and experience. Assistance with relocation expenses will be provided where appropriate.

Why don't you find out more about the exciting possibilities of living and working in Wells, at the foot of the Mendips and on the edge of the Somerset levels, by phoning (0749) 72081 or writing for an application form quoting reference CW/336, from Mr F.M. Taylor, Assistant Personnel Manager, THORN EMI Electronics Ltd, Communications Division, Wookey Hole Road, Wells, Somerset BA5 1AA.

**THORN EMI**  
**Electronics**  
COMMUNICATIONS DIVISION**COUNT ON YOUR FUTURE IN ANALYSIS**

With Mecca Bookmakers' young professional team in Central London. The Company has a well established IBM 4331 installation under VM/CMS and are leaders in their field with an imaginative development using a dual 8066 C.T.I. momentum system driving digitisers and Prestel-type screens. In addition, they are using IBM PCs linked to the 4331 as management work stations.

They are now looking for someone who can co-ordinate the future development of their accounting systems. The successful applicants will have a clear knowledge of accounting concepts and, either a formal accounting qualification or several years accounting systems implementation experience. You will also have the ability to design systems from scratch and implement them.

The Machine Experience is not important, but good communication skills and a facility at user liaison, training and education is, so if you are an experienced professional and want a salary to **£12,500** plus all the normal large company benefits.

Then for an application form and early interview, contact:  
Computant Limited (Recruitment Agency),  
14 Mount Pleasant, Tunbridge Wells, Kent.  
Tel: (0892) 35712/3/4. 24 hours answerphone.

**Computant****Senior Programming Staff — System 34 and 38**Starting salaries up to £12,000  
WEST LONDON

Lyons Tetley, one of the UK's leading food manufacturing companies, is highly successful with turnover in excess of £150 million.

We seek additional experienced senior programmers to meet a continuing, expanding demand for increased computer applications.

We use System 34's and 38's with numerous on-line systems throughout the operational and administrative functions of our very large food manufacturing, marketing and distribution business, based in Greenford, Middlesex.

Candidates should have 3 to 5 years RPG programming experience on System 34 or 38. The ability to design on-line systems integrating a number of activities, to work on your own initiative and to communicate clearly to both technical and non-technical staff are essential.

**Opportunity to work in JERSEY for 12 months**

The most senior position involves designing the overall computer system for one of our subsidiary companies in Jersey and spending the working week on the island for up to 12 months.

We can offer you a lively environment, a well established department and the usual benefits expected of a large company, including relocation assistance, where appropriate.

Please write with a detailed C.V., or telephone for an application form, to: Liz Elder, Head: Office Personnel Manager, Lyons Tetley Limited, 327-347 Oldfield Lane North, Greenford, Middx. UB8 0AZ. Tel: 01-578 2345, ext 502.

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The position which is based at the Company's technology centre at Dunstable will require a working knowledge of microcomputer hardware, the knowledge of at least one high level language other than Cobol, the ability to program in assembler and a familiarity with real-time operating systems.

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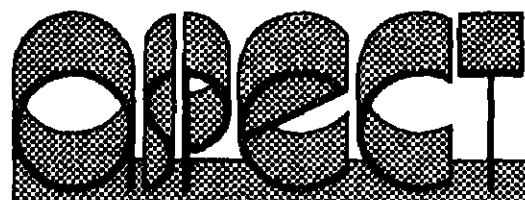
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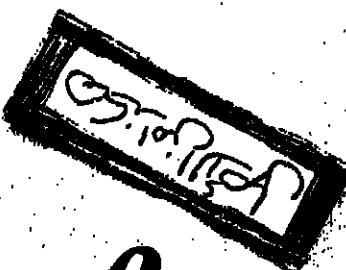
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Telephone: 0602 580935

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We have several clients either running System 38s or in the process of upgrading to new machines. They urgently require RPG III expertise and will pay highly for the right people. Requirements range from Programmer through to Senior Analyst/Programmer (with increasing responsibility) and also include consultancies. REF: MB/C

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### BASIC + 2 PROGRAMMER

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Applications should be addressed to the King and sent to the University of Tromsø, Postboks 656, 9001 Tromsø, NORWAY before September 29th 1983.

(10024)

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You'll have a VDU operator reporting to you and that's it for the moment. You're the computer operator, you run the department and make sure management has the information it needs. You'll also be responsible for the implementation of these new systems.

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**Project Leader**

S Dorset to £12.5K + car  
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**Analyst Programmers**

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**Project Leader**

North Wilts £11K+  
Commercial organisation with large dual ICL mainframes and a mini computer network require project leader with proven skills in supervision of on-line systems development. Degree essential; ICL background preferred. Minimum age 30 years. Re-location assistance. Ref. 822

**Systems Analysts**

N Bucks £10-13K  
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# LWCR

**London West Computer Recruitment****Project Leader**

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**RPG II/III A/Programmers**

Glos, Wilts, Hants £ negotiable  
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**Technical S/W Support**

Bucks £10.5K+  
Manufacturing and distribution company with two large ICL mainframe machines seek a software specialist for the team providing technical support of IDMS and TPMS. Knowledge of VME, DME and CME is also required. Excellent benefits and working conditions. Re-location assistance. Ref. 761

**A/Programmers, Team Leader**

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South Coast £16K+  
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**Support Engineers**

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Subsidiary of large telecommunications organisation seeks several software support engineers with a strong hardware background to provide first line customer support on a range of Intel based products. Assembler and high level languages essential. Degree or equivalent qualification required. Large company benefits and re-location. Ref. 725

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South Wales £7.5-12K  
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**Real Time Engineers**

West, South, Wales £10-£15K+  
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**Analyst Programmers & Programmer**

LONDON SW6 up to £12,779 (under review)  
Following a number of internal promotions, British Gas have openings for Analyst Programmers and a Programmer at their London Computing Centre in Fulham.

Commercial systems are mainly developed on an ICL VME 2900 range mainframe computer using structured development techniques and COBOL. Engineering and scientific systems run on a UNIVAC 1100/61. Development projects at the Centre include internal and external networks; application areas currently under development cover stock control, accounting, commercial and industrial contracts, personnel and engineering. System types include batch, on-line and database.

**Analyst Programmer**

- ☐ At least 3 years in a mainframe commercial environment
- ☐ Practical experience in COBOL and mainframe job control languages
- ☐ Ability to develop programs through all stages [analysis, design, program development and system implementation]
- ☐ Experience in structured development techniques.

**Programmer**

- ☐ At least 15 months in a mainframe commercial environment
- ☐ COBOL and use of job control languages
- ☐ Experience in structures programming

Salaries: For Analyst Programmer, between £10,421 and £12,779. For Programmer, between £8,715 and £10,000. (All salaries are currently under review). Benefits are those normally associated with a large progressive organisation.

Applicants should write, giving full personal and career details, quoting the relevant reference number - Analyst Programmer: EP/764000/CW; Programmer: EP/121601/CW, to: Senior Personnel Officer (HQ Services), British Gas, 59 Bryanston Street, London W1A 2AZ.

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(6081)

# SYSTEMS & PROGRAMMING

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ICL 2900 TPMS ANALYST	- LONDON
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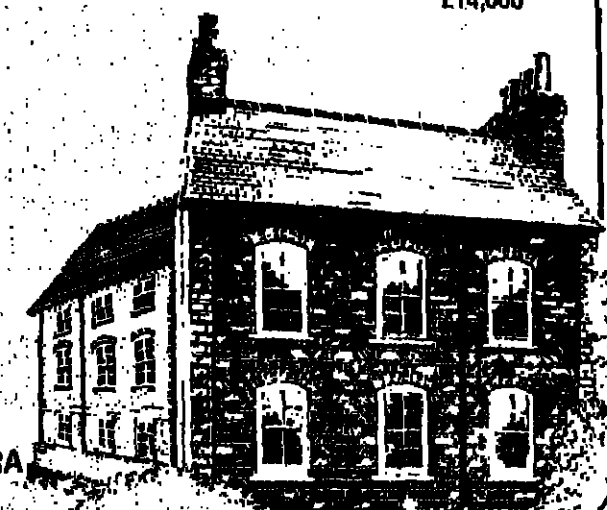
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## ANALYST/PROGRAMMER

IBM S/34 & S/36  
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We require an experienced analyst/programmer to help us in the achievement of these ambitious plans. Though based in Aldershot, he/she will travel to Europe frequently, sometimes at short notice. The ideal applicant will have proven experience in the design, programming and implementation of complex System/34 applications in RPG II. In addition, he/she will have a capacity for hard work; be self-motivating; and diplomatic.

The starting salary for this position is negotiable and will be commensurate to the experience of the successful applicant.

Please write, enclosing c.v., to:  
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**PROGRAMMER/ANALYST**

- ★ DEC PDP11 RSTS/E, BASIC(+)
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AND AS WE HAVE NO MORE SPACE IF YOU THINK YOU WOULD BE ABLE TO HELP US, PLEASE CONTACT ROY BELL ON 0742 730191.



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**BBC**

(6100)

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**ATA COMPUTER RECRUITMENT**

(6071)

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